2023 WA Food Security Report









Australian Government

About

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INTRODUCTION

Food security is defined as when all people, at all times, have physical, social and economic access to a sufficient quantity of safe and nutritious food that meets the dietary needs and food preferences for an active and healthy life (FAO, 2006).

While food insecurity is most often associated with the developing countries, there is evidence to suggest that within Australia as many as one in six adults and over 1.2 million children are food insecure (Foodbank, 2021). Food insecurity is not only restricted to vulnerable groups in the community such as the homeless and unemployed, but for low-income households, as food consumes a larger proportion of the household budget, the ability to purchase a sufficient quantity of healthy nutritious food can present a major challenge. The most common reason why low-income households experience food insecurity are unexpected expenses or bill shock.

However, in the long-term, concerns are also emerging about the ability of our current food systems to provide food security and nutrition without compromising the economic, social and environmental bases for future generations (Lancet Commission, 2019). Our food production systems are contributing to climate change, depleting natural resources, and contributing to growing social and economic inequality.

In the midst of the COVID-19 pandemic, ABARES (2020) proclaimed that Australia was one of the most food secure nations in the world, with access to a wide variety of healthy and nutritious food. With Australia exporting around 70 percent of the food it produces, disruptions to international supply chains were anticipated to result in only temporary shortages for some imported food products.

While Western Australia (WA) is also a substantial producer and exporter of grains, meat, and fresh fruit and vegetable products, the Department of Agriculture and Food (2009) acknowledged that WA imported in value as much food as it exported. With retail food sales estimated to exceed AUD 10.2 billion, and exports valued at around AUD 4.7 billion, this implies that no less than 46 percent of the food consumed within WA is imported. Hence, this makes WA particularly vulnerable to disruptions in the supply of primarily processed food products from the Eastern States.

Australia is also experiencing other structural risks to our food system, including the scarcity of natural resources, and trade and supply chain volatility (Economist, 2022). Garnaut (2008) concluded that climate change was most likely to affect agricultural production in Australia through changes in water availability, water quality and temperature. Climate projections for WA are that average annual temperatures will increase by 1.1–2.7°C by the end of the century, with annual rainfall in the south-west projected to decline by 12 percent by 2100 (Sudmeyer, Bennett and Strawbridge, 2016). In the northern and central parts of WA, annual rainfall is forecast to remain relatively unchanged. However, these changes will be superimposed upon and increase WA's already large climate variability. Consequently, the intensity and duration of hot spells are projected to increase across WA, wet years are likely to become less frequent and dry years (and drought) are likely to become more prevalent.

In supporting the challenges associated with WA's future growth and development, the availability of water is emerging as a key consideration (Department of Water, 2016). To meet the anticipated growth in demand from households, agriculture and industry, an additional 250 gigalitres of water will be required per year. As surface water and groundwater resources are very sensitive to climate change, rainwater recharge is expected to reduce (Sudmeyer, Bennett and Strawbridge, 2016). Furthermore, with the increasing demand for fresh water, seawater intrusion into coastal aquifers is expected to significantly degrade water quality and to further reduce the availability of freshwater (Water Corporation, 2022).

Agriculture is the dominant form of land use in Australia. However, the degradation and the loss of highquality agricultural land is a major ecological and economic concern for WA. Good soils provide the foundation for our food system, boosting the resilience of agricultural and pastoral systems to the effects of increased climate variability. Healthy soils are critical in improving soil porosity, water infiltration and storage, and nutrient retention, with a diverse soil biota supporting healthy plant growth (Soil and Land Conservation Council, 2020).

However, most soils and landscapes in WA are vulnerable to some form of land degradation, with many already in a state unsuitable for agriculture. Most soils in WA are intrinsically susceptible to wind and water erosion, acidification and salinisation, waterlogging, compaction, and soil water repellence. Under current cropping regimes, soils with low pH buffering capacity are becoming more acidic. Extensive surveys of soil pH profiles across the south-west show that more than 70 percent of surface soils and almost half of subsurface soils are below appropriate pH levels (DPIRD, 2017). Others are more prone to wind erosion and compaction, while others have become too salty through rising water tables. At present, one million hectares of agricultural land in the south-west of WA is severely affected by salt (DPIRD, 2021).

Biodiversity is essential to the natural environment and to human survival, wellbeing and economic prosperity (Convention on Biological Diversity Article 2, 2006). Over the past two centuries, Australia has lost more mammal species than any other continent and continues to have one of the highest rates of species decline among countries in the OECD (DCCEEW, 2021). The south-west of WA has some of the richest diversity of plants and animals on earth (Integrate Sustainability, 2018). However, it is also recognised as one of the world's 35 biodiversity hotspots. In the south-west of WA, many endemic species are experiencing a loss of habitat, arising primarily from the large scale clearing of land for intensive agriculture (from 1920 to 1980), urban expansion, the development of infrastructure and the increasing demand for natural resources. The growing demands of an expanding population, coupled with human-induced climate change in the form of prolonged drought, extreme weather events, fire and habitat destruction are projected to exacerbate biodiversity loss.

On the consumption side, with greater urbanisation and increasing personal wealth, diets are changing. As personal income increases, consumers are eating more meat, dairy products, fats and oils, and more highly processed convenience food. Much of this food is energy dense, high in saturated fats, sugar and salt, but very low in dietary fibre, nutrients and minerals (Lancet Commission, 2019). Hence, while most consumers have access to a greater variety of food, far too many consumers are making food choices that are not consistent with good nutrition, health and wellbeing. Today, six of the top 11 risk factors driving the global burden of disease are related to diet (IFPRI, 2017). Unhealthy diets pose a greater risk to morbidity and mortality than unsafe sex, and alcohol, drug and tobacco use combined (Lancet Commission, 2019).

To future-proof the food industry in Australia, it is important that government and industry stakeholders view sustainability more holistically. There must be a careful balance between environmental objectives, such as reducing non-functional food packaging, reducing carbon emissions, using water more efficiently, improving soil health and biodiversity, and the on-going, effective and efficient production of food for Australian consumers. National agricultural policies must promote agricultural production systems and technologies that increase output without having an adverse impact on natural resources and biodiversity, whilst enhancing food producers' resilience to climate change (FAO, 2018).

Producers must also have access to markets, rural infrastructure and appropriate inputs, technologies, and services. Sustainability also depends on the implementation of appropriate institutional mechanisms that result in the more equitable distribution of the net income from the chain (FAO, 2014). Government has a role to play in strengthening the resilience of key supply chains and helping to fill gaps in the market where private sector investment is insufficient due to high levels of risk and uncertainty.

While the WA Government has, in recent times, introduced a number of policies and programs to mitigate the impacts of climate change, to support and encourage the adoption of more sustainable farming practices, to improve diets and to reduce food waste, there is an immediate need for a cohesive overarching multi-agency assessment that informs policy and supports strategic long-term investment in a more sustainable food system.

In 2018, Perth NRM was awarded a research grant under the National Landcare Program [NLP], Regional Land Partnerships funding initiative [2019-2023], to facilitate the development of a food security plan for the State of Western Australia. The principal objective of the study was to identify and better understand emerging food security challenges and to identify and prioritise timely actions to meet these challenges.

Utilising PESTEL, a strategic framework commonly used to evaluate the Political, Economic, Social, Technological, Environmental and Legal factors within which a firm operates, a comprehensive qualitative questionnaire was developed for primary producers and market intermediaries. Under each element of the PESTEL framework, respondents were asked to identify:

- the key constraints that were impacting their business;
- what support their industry association(s) were providing [where applicable];
- what they themselves were doing; and
- what government (whether it be local, State or Commonwealth) was doing or needed to do to address the constraints they identified.

EXECUTIVE SUMMARY

From the results of the PESTEL analysis, at the farm level, the key POLITICAL constraints impacting the long-term sustainability of food supply chains in WA include:

- the increasing amount of bureaucracy associated with the development and day-to-day operation of food production enterprises
- the increasing costs of compliance
- the diminishing levels of government support
- the lack of any long-term planning
 - urban encroachment
 - competition policy
 - labour and the reliance on migrant workers/backpackers
 - the lack of incentives for sustainable agriculture
 - competition from mining
 - no policy on carbon farming
- market access
- insufficient investment in public infrastructure
 - broadband services in rural areas
 - transport and roads
 - health and education services in rural areas

The key ECONOMIC constraints include:

- the lack of labour and the high cost of labour
- the increasing costs of inputs
- the increasing costs of compliance
- the rising cost of utilities and government services
- the high cost of transport
- diminishing prices
 - increasing power of the supermarkets
 - lack of processing facilities
 - consumer price resistance

The key SOCIAL constraints relate to:

• the poor perception of the industry

- no social license
- declining rural populations
- the poor quality of labour/low productivity
- competition from mining

The key TECHNOLOGICAL constraints relate to:

- poor internet connectivity in rural areas
 - difficulties in adopting and implementing precision farming systems
- lack of equipment/technical support staff

The key ENVIRONMENTAL constraints were the:

- climate variability and more extreme weather events
- the lack of water

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- increasing temperatures
- the impact of agricultural chemicals on non-target species
- control of declared species
- land degradation

The major LEGAL constraints were associated with:

- occupational health and safety
- compliance
 - native title
 - trespass [as it related to biosecurity]

In addressing these issues, farmer groups and associations were involved in:

- policy advocacy
- undertaking research
- conducting workshops and field days
- promoting best practice
- facilitating market access
- addressing supply chain constraints
- addressing land tenure/native title

Farmers themselves had employed multiple strategies to:

- reduce costs
- improve quality and productivity
- explore new markets
- implement more sustainable farming practices
 - to use water more efficiently
 - adopt precision farming
 - reduce the use of hazardous chemicals
 - utilise alternative varieties/bloodlines that are more resilient/adaptable

At the retail level, the major POLITICAL constraints were:

- the lack of long-term planning
- inconsistent quarantine
- ban on the use of single use plastic bags

The major ECONOMIC constraints at the retail level related to:

- the lack of product
- the lack of labour

- the increasing cost of food products from processors and market intermediaries
- the increasing costs of doing business
- declining profit margins
- high cost of transport
- high cost of alternative packaging
- increasing power of supermarkets
- competition
- lack of customers
- declining number of primary producers

Retailers were engaging in a number of strategies to stay in business including:

- extending their product range
- reducing/minimising waste
- using multiple suppliers
- dealing directly with farmers
- improving service
- focusing on quality
- differentiating themselves from competitors

As retailers provide the last link in the chain, they are widely regarded as having the most contact with consumers and are therefore the best placed to identify consumer trends. Retailers noted that consumers wanted to know:

- where the product was from
- why prices were so expensive
- when the product was in season
- how to use the product

Consumers were becoming:

- more price conscious
- more quality conscious
- more concerned about environmental and ethical issues
- more price resistant

Consumers wanted products that were:

- locally produced
- more convenient
- purchasing in smaller quantities more often

Consumers were not prepared to pay a price premium for product that had been grown sustainably.

In addressing the impediments industry faced, respondents saw a need for government to:

- provide more support for local food producers
 - reduce the amount of bureaucracy
 - communicate/consult with industry
 - assist small businesses in the implementation of regulations
 - facilitate and promote social license
 - provide greater penalties for trespass
 - trust local food producers as stewards and custodians of natural capital
 - invest and upgrade
 - rural roads
 - water infrastructure

- telecommunications and broadband
- improve health and education services in rural areas
- improve long-term planning
 - clear policy/strategy for the food industry
 - define/prescribe land use in rural and peri-urban areas
- review competition policy to
 - curb/control the power of supermarkets
 - provide greater financial incentives for value-added processing
 - facilitate greater price transparency
 - regulate/enforce truth in labelling food products
 - promote local WA product
- provide incentives for the adoption of sustainable agriculture practices
 - introduce legislation to support the trade in carbon credits
 - provide clarity on carbon pricing
 - incentives for renewable power generation
- educate
 - consumers to make more informed decisions about appropriate food choices
 - add agriculture to the school curriculum
 - implement/offer traineeships in agriculture

BACKGROUND

Food Security

Food security is broadly defined as when all people, at all times, have physical, social and economic access to a sufficient quantity of safe and nutritious food that meets the dietary needs and food preferences for an active and healthy life (FAO, 2006).

While food insecurity is most often associated with the impacts of adverse weather events or conflict in the developing countries, there is evidence to suggest that more than one in six Australian adults and over 1.2 million children are food insecure (Foodbank, 2021).

In Australia, food insecurity ranges from having to reduce the variety, quality or desirability of the food consumed [moderately food insecure] to having multiple disruptions to eating patterns and reduced food intake [severely food insecure] (Foodbank, 2021). On this basis, over 28 percent of Australian adults can be categorised as food insecure.

Food insecurity is not restricted only to vulnerable groups in the community such as the homeless and unemployed (Foodbank, 2021). Food insecurity can impact men and women of all ages, living alone, in families or in groups, and it effects people living in urban, regional and rural areas.

The most common reason why people experience food insecurity are unexpected expenses or bill shock and low incomes (Foodbank, 2021). Butcher et al. (2018) identified household income as a strong predictor of food insecurity. For low-income households, the ability to purchase a sufficient quantity of healthy nutritious food is a major challenge, for food consumes a larger proportion of the household budget. Financial pressures create difficult choices, such as choosing between heating and eating.

Food insecurity, however, is not exclusive to low-income households - the problem also exists within higher income households where chronic health conditions, unemployment, or excessive spending on gambling, alcohol, tobacco or substance abuse can create financial instability and put pressure on food budgets (Butcher et al., 2018). Residing in rental accommodation was also found to have a positive association with

food insecurity, with divorced and separated people especially at risk because of the division of household income.

Australian families that are welfare-dependent spend 40 percent of their disposable income on food, as opposed to 20 percent for the average Australian family (Lindberg et al., 2015). Among the urban population, poverty, the increasing cost of living and poor housing are reported to play significant roles in food security status. A higher prevalence of food insecurity has also been reported among marginalised communities, such as asylum seekers, and Aboriginal and Torres Strait Islander people.

Food security is broadly understood to be comprised of four elements (FAO,2006):

- 1. Food availability. This addresses the "supply side" of food security and is determined by the level of food production, stock levels and net trade (imports and exports).
- 2. Physical, financial and socio-cultural access to food. This addresses food distribution, transport and logistics, and the financial capacity of households to purchase a sufficient quantity of food to meet their requirements.
- 3. Food utilisation acknowledges that not only must food be available and accessible to households, it must also be safe and nutritious. This element considers the selection of food by the household, food storage and preparation, and the nutritional quality of the food. Food utilisation is also impacted by the availability of clean water, sanitation and health care.
- 4. Food stability is about being food secure at all times. Food security may be threatened by shortterm shocks resulting from seasonal variations, severe weather events, a change in employment status, conflict, or a rise in food prices. When food prices do rise, it is the poor who are most at risk because they spend a much higher portion of their household income on food.

More recently however, there has been considerable debate about the inclusion of two additional variables: sustainability and agency (HLPE, 2020).

- 5. Agency refers to the capacity of individuals or groups to make their own decisions about what foods they eat, what foods they produce, how that food is produced, processed and distributed within food systems, and their ability to engage in processes that shape food system policies and governance. Government has an important role to play in providing the institutional context and in developing public policies that enable the exercise of agency, by supporting democratic, inclusive and participatory processes and institutions. The concept of agency in food systems is deeply connected to human rights, including the right to food.
- 6. Sustainability refers to the long-term ability of food systems to provide food security and nutrition in a way that does not compromise the economic, social and environmental bases that generate food security and nutrition for future generations. Sustainability has been added to the concept of food security to accommodate the impact food production systems are having on climate change, how climate change is impacting food production, the degradation of natural resources, and the growing social and economic inequality. Sustainable food systems are productive and prosperous, equitable and inclusive, empowering and respectful, resilient, regenerative, and healthy and nutritious.

In the midst of the COVID-19 pandemic, ABARES (2020) proclaimed that Australia was one of the most food secure nations in the world, with access to a wide variety of healthy and nutritious food. With Australia exporting around 70 percent of the food it produces, disruptions to international supply chains were anticipated to result in only temporary shortages for some imported food products, which collectively account for around 11 percent of the total value of food consumed in the country. The majority of food and beverage imports are processed products (including frozen vegetables, seafood and beverages), along with small amounts of out-of-season fresh produce that play an important role in meeting consumer preferences for taste and variety.

While WA is also a substantial producer and exporter of grains, meat, and fresh fruit and vegetable products, in their 2009-2012 plan to support the development of the food industry in WA, the Department of Agriculture and Food (2009) acknowledged that WA imported in value as much food as it exported. With retail food sales currently estimated to exceed AUD 10.2 billion, and exports valued at around AUD 4.7 billion, this implies that no less than 46 percent of the food consumed within WA is imported. That makes WA particularly vulnerable to disruptions in the supply of food.

According to the Economist Global Food Security Index 2022, Australia is one of the most food secure nations in the world (ranked 22 from 113 nations). However, globally, in 2022, the Global Food Security Index (GFSI) declined dramatically with falls in two of its strongest pillars: affordability, and food quality and safety, and continued weakness in the two other pillars: food availability, and sustainability and adaptation.

Affordability is a key component of food security, for whenever safe and nutritious food is not available at a price affordable to all, consumers welfare is compromised. On this pillar, Australia was ranked first.

However, on both food availability (rank 48) and sustainability (rank 33), Australia performed poorly. The two critical issues here were the volatility of production - occasioned primarily by seasonal variations in rainfall - and the absence of any long-term food security planning and policy (Economist, 2022).

However, Australia is also experiencing other structural risks to its food system, including the scarcity of natural resources, and trade and supply chain volatility (Economist, 2022). Farmers will need to grow more food on the same amount of land with fewer inputs. The GFSI reveals that there are clear gaps and challenges in managing the stress on natural resources. Access to water is a risk as Australia endures warmer temperatures. Investments in irrigation infrastructure are urgently needed to install, improve, or expand smart irrigation infrastructure. Urgent investment is also needed to boost levels of organic carbon to stabilise soil structure, reduce erosion, improve soil fertility, and enhance the ability of the soil to hold water.

In their submission to the Senate Inquiry into Food Security in Australia, the Australian Fresh Produce Alliance (2022) spoke of the need for government to fully understand and appreciate the complexity of both input and output supply chains. In the production of fresh fruit and vegetables, the industry relies on imported inputs to grow fresh produce, including seeds, chemicals, fertiliser, machinery, and packaging. As the COVID-19 pandemic demonstrated, closures and any reduction in the capacity of key infrastructure in the fresh produce sector could quickly lead to product shortages on shelves. Investments in road and rail infrastructure, as well as safeguarding critical infrastructure such as distribution centres, were necessary to ensure food security within Australia.

To future-proof access to fresh produce in Australia, it was important that government and industry stakeholders view sustainability more holistically (AFPA, 2022). Central to this concept is the need to understand that if business itself is not profitable, then it cannot be sustainable. There is an urgent need to balance environmental objectives, such as reducing non-functional food packaging, reducing carbon emissions, using water more efficiently, improving soil health and biodiversity, and the on-going, effective and efficient production of food for Australian consumers.

Agriculture and Sustainability within Western Australia

Any examination of food security and nutrition policy is best approached within a sustainable food systems framework underpinned by the right to food (HLPE, 2020). The right to adequate food is recognized as a fundamental human right to be upheld by states in the 1948 Universal Declaration of Human Rights (UNGA, 1948). States have the duty, obligation and responsibility to respect, protect and fulfil human rights, including the right to food, under international law, as outlined in Article 11 of the 1966 International Covenant on Economic, Social and Cultural Rights.

In 1996, the Member States of the United Nations reaffirmed "the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger" at the World Food Summit (UN, 1996).

Globally, food production is the considered to be the greatest cause of environmental change (Lancet Commission, 2019). Agriculture occupies about 40 percent of the land available and is responsible for using as much as 70 percent of the fresh water available. The conversion of natural ecosystems to croplands and pastures is the most significant factor contributing to the loss of biodiversity, with the overuse and misuse of nitrogen and phosphorus fertilisers causing eutrophication in inland and coastal waterways. But perhaps most significantly and seldom recognised, food production is responsible for up to 30 percent of global greenhouse gas emissions.

While agriculture contributes to climate change, the industry is also directly impacted by a changing climate (Godfray and Garnett, 2014). Garnaut (2008) concluded that climate change was most likely to affect agricultural production in Australia through changes in water availability, water quality and temperature. While an increase in carbon dioxide concentration could increase the rate of photosynthesis for some plants, the positive impacts of carbon fertilisation were more likely to be restricted by higher temperatures and lower rainfall. Significant reductions in productivity were anticipated to arise from the more frequent occurrence of severe weather events including bushfires, drought, and flooding.

Climate projections for WA are that average annual temperatures will increase by 1.1–2.7°C by the end of the century, with annual rainfall in the South-west projected to decline by 12 percent by 2100 (Sudmeyer, Bennett and Strawbridge, 2016). In the northern and central parts of WA, annual rainfall is forecast to remain relatively unchanged. However, these changes will be superimposed upon and increase WA's already large climate variability. Consequently, the intensity and duration of hot spells are projected to increase across WA, wet years are likely to become less frequent and dry years (and drought) are likely to become more prevalent.

In supporting the challenges associated with WA's future growth and development, the availability of water is emerging as a key consideration (Department of Water, 2016). To meet the anticipated growth in demand from households, agriculture and industry, an additional 250 gigalitres of water is required per year. As surface water and groundwater resources are very sensitive to climate change, rainwater recharge is expected to reduce (Sudmeyer, Bennett and Strawbridge, 2016). Furthermore, with the increasing demand for fresh water, seawater intrusion into coastal aquifers is expected to significantly degrade water quality and to further reduce the availability of freshwater (Water Corporation, 2022).

Within Australia, agriculture accounts for around three percent of GDP (NFF, 2017). Today, around 371 million hectares (48 percent of the land in Australia) are used for agriculture, making it the dominant form of land use. Land degradation and the loss of high-quality agricultural land is a major ecological and economic concern for WA. Good soils provide the foundation for our food system, boosting the resilience of agricultural and pastoral systems to the effects of increased climate variability. Healthy soils are critical in improving soil porosity, water infiltration and storage, and nutrient retention, with a diverse soil biota supporting healthy plant growth (Soil and Land Conservation Council, 2020).

However, most soils and landscapes in WA are vulnerable to some form of land degradation, with many already in a state unsuitable for agriculture. Most soils in WA are intrinsically susceptible to wind and water erosion, acidification and salinisation, waterlogging, compaction, and soil water repellence. Under current cropping regimes, soils with low pH buffering capacity are becoming more acidic. Extensive surveys of soil pH profiles across the south-west show that more than 70 percent of surface soils and almost half of subsurface soils are below appropriate pH levels (DPIRD, 2017). Others are more prone to wind erosion and compaction, while others have become too salty through rising water tables. At present, one million hectares of agricultural land in the south-west of WA is severely affected by salt (DPIRD, 2021). More recently, Ma et al. (2022) demonstrated that the loss of potassium from leaching and crop removal in soils in the south-west of WA was leading to a long-term reduction in the amount of plant-available potassium, negatively affecting both profitability and sustainability.

Biodiversity is essential to the natural environment and to human survival, wellbeing and economic prosperity (Convention on Biological Diversity Article 2, 2006). Over the past two centuries, Australia has lost more

mammal species than any other continent and continues to have one of the highest rates of species decline among countries in the OECD (DCCEEW, 2021).

The south-west of WA has some of the richest diversity of plants and animals on earth (Integrate Sustainability, 2018). However, it is also recognised as one of the world's 35 biodiversity hotspots. In the south-west of WA, many endemic species are experiencing a loss of habitat, arising primarily from the large scale clearing of land for intensive agriculture (from 1920 to 1980), urban expansion, the development of infrastructure and the increasing demand for natural resources. The growing demands of an expanding population, coupled with human-induced climate change in the form of prolonged drought, extreme weather events, fire and habitat destruction are projected to exacerbate biodiversity loss.

Food is a critically important resource that cannot be wasted and yet an estimated one-third of the food produced for human consumption is never eaten (World Bank/FAO, 2017). Food loss and waste occurs along the entire food supply chain - from production and processing to transport and distribution, retail, and consumption. While most food loss and waste in lower-income countries occurs at production and post-harvest levels, in the middle and high-income countries, most of the food loss and waste occurs during distribution and consumption. In Australia, Europe, New Zealand, and North America, more than 60 percent of food loss and waste occurs in retail, the food service sector and in the household. Regrettably, much of the food is wasted because it fails to meet the high aesthetic quality standards established by the major food retailers, whereas at the consumer level, poor purchase planning and expiring 'best-before dates' can result in large amounts of food waste. While some of the reject product can be sold to food processors or used as animal feed, much of the waste product is simply dumped as landfill. Across the world, food waste represents between 23 - 67 percent of municipal solid waste. In WA, it is estimated that around 50 percent of the waste generated by households is organic (Waste Authority WA, 2016). Baker et al. (2009) estimated that Australian households discard AUD 5.2 billion of food annually, equating to over AUD 200 per person per year.

While the International Sustainability Unit (2015) note that just under one half of the global greenhouse gas emissions arising from agriculture can be attributed to on-farm food production, the balance is attributed to other supply chain processes including packaging, processing, transport, storage, retail and waste disposal. With the increasing concentration and aggregation of the food industry within Australia at both the food processing and food retail level, food chains in WA are becoming longer, thus exposing the citizens of WA to greater risk of a food safety breakdown and a reduction in the resilience of the food system to price shocks, breakdowns in transportation and adverse climate events.

In response, consumers around the world have begun to embrace food products that support local food producers (ISU, 2015). While there are many motivating factors behind the trend, it is believed that the demand for local food is largely being driven by anti-globalisation sentiments. However, locally sourced foods are also perceived to offer consumers fresher produce, clear provenance, and the ability to support the local economy and the livelihoods of smallholder farmers. Producing crops for local markets also encourages a greater diversity of food crops, with a closer relationship between consumers and food producers leading to the more widespread adoption of ecologically sound agricultural practices. ISU acknowledge the role that farmers provide in the form of ecosystem services. These services include maintaining water quality, flood protection, maintaining populations of pollinating insects, enhancing recreational and amenity values, and improving air quality.

On the consumption side, with greater urbanisation and increasing personal wealth, diets are changing. As personal income increases, consumers choose to eat more meat, dairy products, fats and oils, and more highly processed convenience food. Much of this food is energy dense, high in saturated fats, sugar, and salt, but very low in dietary fibre, nutrients and minerals (Lancet Commission, 2019). Hence, while more consumers have broader access to a greater variety of food, far too many consumers are making food choices that are not consistent with good nutrition, health and wellbeing.

Today, six of the top 11 risk factors driving the global burden of disease are related to diet (IFPRI, 2017). Unhealthy diets pose a greater risk to morbidity and mortality than unsafe sex, and alcohol, drug and tobacco use combined (Lancet Commission, 2019).

Towards a More Sustainable Food System

In 1987, the UN Commission on Environment and Development defined sustainable development as that which "meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987).

Elkington (1994) is attributed with coining the phase the triple bottom line in which he proposed a sustainability framework that examined a company's social, environmental and economic impact. Often described as the 3Ps, the framework explored the positive and negative impact an organization had on its most important stakeholders (people); on its natural environment (the planet); and its impact on the local, national and international economy (profitability).

Drawing on this framework, in 2015, the 193 Member States of the United Nations adopted the 2030 Agenda for Sustainable Development – which included 17 Sustainable Development Goals (SDGs) and 169 targets - to "ensure all human beings can enjoy prosperous and fulfilling lives and that economic, social, and technological progress occurs in harmony with nature" (UN, 2015).

In 2019, the Global Sustainable Development Report identified food systems and nutrition as entry points for transformative action in achieving the SDGs (UN, 2019). Sustainable agrifood systems are not only essential to human survival and to a world free from hunger, but without addressing and reducing the impact the food system has on the environment, it will be impossible to achieve any of the SDGs.

As the custodian for 21 of the 230 SDG indicators across SDGs 2, 5, 6, 12, 14 and 15, and as a contributing agency for six more, the Food and Agriculture Organisation of the United Nations has recently revised its sustainability agenda. Sustainable development was defined as "the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development - in agriculture, forestry and fisheries - conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable" (FAO Council, 1989).

In addressing sustainability, FAO recognised that the economic, ecological and business environments within which agribusiness was embedded required a new approach. Objectives such as ending poverty, making societies more resilient to climate change, and adopting more sustainable farming systems could not be achieved through traditional sectoral policies alone. A more holistic, integrated, systems-based approach was required to mobilize capacities, information and technologies, and to facilitate greater access to financial and productive resources (FAO, 2018).

FAO (2018) described a sustainable food system as one that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised. This means that the system is: profitable throughout (economic sustainability); it has broad-based benefits for society (social sustainability); and a positive or neutral impact on the natural environment (environmental sustainability). Building a sustainable food system must be considered in the context of rapid population growth, urbanization, growing wealth, changing consumption patterns, globalization, climate change and the depletion of natural resources.

As a consequence, national agricultural policies need to promote agricultural production systems and technologies that increase output without an adverse impact on natural resources and biodiversity, enhancing producers' resilience to climate change and input-use efficiency (FAO, 2018). Food production systems need to respond to population growth, changing diets and a diminishing natural resource base.

Productive and sustainable agriculture implies that producers have access to rural infrastructure as well as appropriate technologies and services.

Food production is closely tied to the natural environment and to the life cycle of plants and animals (FAO, 2014). It is therefore influenced by factors that are, to some degree, beyond the control of producers, and it has social and environmental impacts that are increasingly moving from external to internal. As the private sector is the main actor in organizing the production, processing and marketing of agricultural products (FAO, 2018), governments need to establish the conditions that create a suitable enabling environment to facilitate private sector activities. This usually means improving access to markets by providing an appropriate macroeconomic framework, in addition to the necessary infrastructure, regulation and a suitable legal environment.

Agricultural marketing systems are undergoing rapid transformation (FAO, 2007). Traditional marketing channels are being replaced by coordinated linkages between farmers, processors, retailers and other stakeholders. The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production, delivery to final consumers, and final disposal after use (Kaplinsky and Morris, 2002). Most value chains are characterised by a dominant party (usually a buyer) who determines the overall character of the chain and as the lead organisation, is responsible for upgrading activities and coordinating interaction between the various actors. Commercially, the main objective of value chains is to maximize profitability by not only eliminating inefficiencies, but also by maximizing revenues for all the actors in the chain by creating products that consumers are willing to buy.

Agricultural markets can also advance important social development goals (FAO, 2018). As consumers and other stakeholders in value chains become more concerned about employment conditions along the chain, occupational health and safety issues, the need for producers to comply with food safety standards and minimum residue levels for pesticides, animal welfare and their environmental footprint, there is an increasing requirement for business actors today to demonstrate due diligence.

FAO (2014) define a sustainable food value chain as the full range of farms and firms and their successive coordinated value-adding activities that produce raw agricultural materials and transform them into food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society, and does not permanently deplete natural resources.

However, the social and environmental impacts along the chain also impact the competitiveness and hence the profitability of the chain. Trade-offs often need to be made, for the adoption of 'green' operations may result in a less competitive price. In practice, while some green technologies may be more profitable than less environmentally friendly technologies, others may reduce profitability. On the other hand, social and environmental sustainability are themselves becoming sources of value creation where green products may attract a price premium in the market (FAO, 2014). Improving social and environmental sustainability is thus becoming a strategic objective for agrifood firms because it facilitates access to markets and may provide a means of differentiation in what many consider to be a saturated market.

In addition to commercial viability, the sustainability of food value chains also depends on the implementation of appropriate institutional mechanisms that result in a more equitable distribution of the net income (or value added) arising from the chain (FAO, 2014). With acquisitions, mergers and internal restructuring transforming the competitive environment, coupled with a complex mix of on-going technological, socio-economic, and political changes, compared to food processors and retailers, primary producers are in a position of relative weakness (White, 2000). Suppliers are disadvantaged because of their relatively small size, most lack human and financial resources, they have no brand identity with consumers, and they generally work on much smaller profit margins. Fearne, Duffy and Hornibrook (2005) describe how retailers have utilised their market power to impose promotional allowances, discounts, and charges on suppliers, often retrospectively, and to make changes to contracts without notice. Hingley (2005) describes how, in the absence of any countervailing market power, suppliers have been forced to adapt to the retailers needs and to make significant relationship specific investments. In parallel, as the competition intensifies at the retail

level, prices and margins to suppliers have eroded (Fearne, Hughes and Duffy, 2001), with producers today bearing the majority of the costs associated with the implementation of environmental standards, improved working conditions on farms and the safety and nutritional value of food.

As climate change accelerates, the risks associated with the the supply of food arising from extreme weather events are also growing (Bartos, 2022). Climate change is leading to a higher frequency and severity of extreme weather events such as floods, bushfires, and droughts. While farmers and other private sector actors in the supply chain are taking actions to adapt and/or to mitigate the impacts of climate change, government has a role to play in strengthening the resilience of key supply chains and helping to fill gaps in the market where private sector investment is insufficient due to high levels of risk and uncertainty.

METHODOLOGY

In 2018, Perth NRM was awarded a research grant under the National Landcare Program [NLP], Regional Land Partnerships funding initiative [2019-2023], to facilitate the development of a food security plan for the State of Western Australia. Fundamentally, the project sought to facilitate collaboration between the key stakeholders in WA food supply chains to develop a collective and strategic approach to improve the sustainability of the WA food system. The principal objective of the study was to identify and better understand emerging food security challenges and to identify and prioritise timely actions to meet these challenges.

Value chain analysis focuses on the dynamic linkages between actors within a productive sector (Kaplinsky and Morris, 2002). However, it often fails to address the macroeconomic issues, political issues, and the determinants of social capital, and it struggles to deal with the dynamic linkages between productive activities that go beyond that particular sector. To overcome these deficiencies, PESTEL analysis was employed. PESTEL analysis is a strategic framework commonly used to evaluate the Political, Economic, Social, Technological, Environmental and Legal factors within which a firm operates.

To obtain the desired information from primary producers and stakeholders in the food supply chain, a comprehensive qualitative questionnaire was developed (Appendix 1). Under each element of the PESTEL framework, respondents were asked to identify: (a) the key constraints that were impacting their business; (b) what support their industry association(s) were providing (where applicable); (c) what they themselves were doing, and (d) what government (whether it be local, State or Commonwealth) was doing or needed to do to address the constraints they identified.

With no database to contact individual producers, an electronic copy of the questionnaire, accompanied by a letter of introduction, was sent to all Executive Officers for all known producer associations through the Grower Group Alliance network. Letters were also sent to all other known producer associations including GIWA, the GRDC WA network, Pome Fruit, Stonefruit and Citrus growers' associations, Vegetables WA, the WA Chamber of Fresh Fruit and Vegetable Industries, WAFF, PGA, WA Meat Industry Authority, the WA Branch of the Australian Institute of Food Science and Technology, the WA Branch of the Dairy Industry Association of Australia and the membership of the UWA Institute of Agriculture network.

Despite the letter of introduction containing an offer to pay \$75 to the association of choice for every completed survey, the response rate was very poor. Consequently, a much simpler on-line questionnaire was developed using Qualtrics. Letters were then sent to all of the producer associations (as above) to circulate to the link to their members, with once again, an offer to pay \$75 to the association of choice for every completed questionnaire. Response rates improved somewhat, but the quality of the data received was generally poor.

To obtain responses from the retail sector, a third questionnaire was developed (Appendix 2). In this instance, in the absence of any database, respondents were contacted individually through random shopping mall

intercept surveys. An experienced enumerator was employed to visit major shopping centres and suburban shopping centres within the Perth metropolitan area. The retailer was approached, a brief introduction made to present the aims and objectives of the study, and the retailer asked to participate. In some instances, where retailers were busy, a copy of the questionnaire was left with an email address. Response rates were generally good, although in many instances, the enumerator had to return to the store at a more convenient time, or to wait while retailers served customers. Where the respondent was too busy, a copy of the questionnaire was left. For the major supermarket chains, as purchasing is centralised, direct approaches were made to interview key buyers.

The retail respondents were primarily small independent retailers (butchers or green grocers) or independent supermarkets, most of whom were affiliated to IGA. Citing commercial confidentiality, the three major supermarket chains operating in WA declined to be interviewed, and for many other retailers, time constraints, a shortage of staff or the inability of the person approached to speak for and on behalf of the business often excluded their participation. In such situations, even where a copy of the revised survey instrument was left at the premises, no responses were received electronically.

To process the data received, a spreadsheet was developed using the Statistic Package for Social Sciences (SPSS). Although most often used to analyse quantitative data, for each question, a master list was developed from the respondents' answers, thus converting qualitative responses to a metric form. The master list was dynamic in that it could be added to continuously as respondents spoke about different issues that were relevant to their industry sector. Data from each respondent was added into the database anonymously, identified by a number known only to the data entry operator. Respondents were identified only by their industry sector and the region or area in which their business was located. This was primarily done to enable data to be analysed for each of the industry sectors: meat production (beef and sheep); mixed cropping; grains; horticulture; and dairy.

As the data was qualitative, the number of times (frequency) that an issue was recorded and the percent (by the total number of respondents) were tabulated.

In total, 133 primary producers and retailers participated in the study.

Given that the response rates were low, in the third and final phase of the project, a number of physical workshops were planned with various industry groups. However, it soon became apparent that few producers were willing to participate in these face-to-face events. Consequently, a decision was made for the results to be shared with industry and interested stakeholders through an online webinar. The webinar was recorded in February 2023, and released in March [https://youtu.be/TJeUSmrA_TM].

Once again, all known producer associations were conducted by email to advise them of the webinar and to encourage their participation and feedback. Cognisant of the poor response rate in the past, an offer was also made to the Executive Officer of all producer associations for a spokesperson to attend a meeting of the group or association and to physically present and workshop the key findings with members. Only one group was forthcoming.

It was subsequently decided to undertake an online analysis of any upcoming field days, meetings and events where potential respondents might be gathered. As it was seldom possible to provide time for a spokesperson to address the audience, a flyer was developed and circulated to those present (Appendix 3). At such events, whenever an opportunity presented itself, one-on-one face-to-face interviews were conducted with interested parties. A total of 427 face-to-face interviews and interactions were conducted.

RESULTS

Fresh Fruit and Vegetable Producers

For fresh fruit and vegetable growers, the key political constraints were the excessive bureaucracy (too much red tape) and the increasing costs of compliance (Table 1).

	Ν	%
Too much red tape	4	13.3
Increasing costs of compliance	3	10.0
Diminishing government support	1	3.3
Lack of labour [backpackers][visa]	1	3.3
Lack of investment in infrastructure	1	3.3
No water rights	1	3.3
Small business unable to qualify for agricultural visa scheme	1	3.3
No financial assistance with immigration [for imported workers]	1	3.3
Lack of government understanding	1	3.3
Local government charges [rates]	1	3.3
Unable to enact sustainable solutions	1	3.3
Swan Valley Planning Act	1	3.3
No long-term planning	1	3.3
Right to protect farming	1	3.3
Protection from trespass/theft	1	3.3
Ν	30	

However, collectively, post-COVID, the lack of labour associated with a reduction in the number of backpackers, the inability for small businesses to qualify for the agricultural visa scheme and the lack of any financial assistance from government to assist with immigration arrangements for imported workers received the most amount of attention.

As most horticulture enterprises are reliant on irrigation, access to a sufficient quantity of water and the high cost of water emerged as a significant constraint. For those horticultural enterprises operating in rural areas, the decline in the quality of local roads and transport infrastructure was particularly problematic. However, for those producers located on the outskirts of the Perth metropolitan area, the lack of any long-term planning, particularly with regard to land use and the right to farm, were noted as significant constraints.

Fortuitously, the horticulture industry in WA was perceived to be well served by the many producer associations, who, for and on behalf of their members, were actively engaged in policy advocacy. Growers were receiving advice on the recruitment of overseas workers and the recently updated OHS legislation (Table 2). Through workshops and field days, information and new technologies were being shared with growers to improve productivity and to enhance international competitiveness. Of particular note in the pome fruit industry, PomeWest had been actively involved in a plant breeding program which had recently introduced a new variety (Bravo) to the market. Associations were also actively helping and supporting growers with advice on the control of pests and evasive species which threatened both inter-state and international market access and, in the eyes of the community, the control of native bird species that inflicted significant damage to fruit crops as they approached maturity.

	Ν	%
Policy advocacy	5	16.7
Research	4	13.3
Breeding programs	3	10.0
Nothing	3	10.0
Promoting best practice	2	6.7
Facilitating recruitment of overseas workers	2	6.7
Policy advice on pest control/evasive species	2	6.7
Conducting workshops/field days	2	6.7
Addressing supply chain impediments	2	6.7
Improving productivity	1	3.3
Facilitating access to water	1	3.3
Sharing information	1	3.3
Offer post-harvest support programs	1	3.3
Facilitating market access	1	3.3
Providing advice on approved land use	1	3.3
Facilitating networks	1	3.3
Education and training on new OHS requirements	1	3.3
Improving international competitiveness	1	3.3
Ν	30	

Table 2: What farmer associations were doing to address political constraints

The single most important economic constraint was the lack of labour, the high cost of labour and in those instances where the only labour available was unskilled, its poor productivity Fresh fruit and vegetable growers could not compete with the wages paid by the mining industry and in many rural communities, there was a lack of accommodation for workers (Table 3).

Table 3: Economic constraints at the producer level

	Ν	%
Increasing cost of inputs	12	40.0
Lack of labour	10	33.3
Increasing power of supermarkets	6	20.0
Low prices	6	20.0
Rising costs of compliance	5	16.7
High cost of labour	5	16.7
Unable to achieve economies of scale	2	6.7
High cost of transport	2	6.7
Lack of product/supply	2	6.7
High costs of containerization/shipping	2	6.7
Rising cost of utilities/government charges	2	6.7
High costs of engaging consultants for government approvals	2	6.7
Pressure from market intermediaries	2	6.7
Consumer price resistance	2	6.7
Cant compete with wages paid for mining	1	3.3
Need for farmers to get a fair share of retail price	1	3.3
Over supply	1	3.3
Price instability	1	3.3

Poor/declining quality	1	3.3
Competition from imports	1	3.3
No accommodation for workers	1	3.3
Poor roads	1	3.3
Poor labour productivity	1	3.3
Seasonality	1	3.3
Rising cost of OHS compliance	1	3.3
High cost of implementing new technologies	1	3.3
Lack of industry collaboration	1	3.3
Changing consumer preferences	1	3.3
Royalty payments [for improved varieties]	1	3.3
Lack of markets	1	3.3
Competition	1	3.3
Inconsistent supply	1	3.3
Price discounting by supermarkets	1	3.3
Ν	30	

Post-COVID, given the disruptions to international supply chains, the costs of seed, chemicals and fertiliser were increasing. In addition, the costs of transport to both domestic and international markets were increasing, with the costs of fuel, electricity and other government charges placing additional financial pressures on the business. For those growers supplying the supermarkets, the costs of compliance were increasing, most recently with the need for growers to address the provisions of the Modern Slavery Act.

Not only were costs increasing, but the profitability of horticultural enterprises was being undermined by declining prices. Competition from imports was only a minor consideration, given the strict biosecurity protocols in place to protect local growers from the incursion of exotic pests and diseases. The competition was from within, with the major supermarkets perceived to be continuously driving prices down. As real wages had not increased, there was also an element of consumer price resistance that made it even more difficult for growers to pass on the additional costs of production. In part, some growers attributed the decline in price to an oversupply situation, while others attributed it to a decline in quality, brought about because of the poor growing season and the lack of labour.

To address these political and economic constraints, a large number of growers were engaged in direct marketing, selling their product from the farm gate directly to retailers, institutional buyers and even to consumers (Table 4). For many, given the lack of labour and diseconomies of scale, decisions were being made to downsize or to diversify their income base by engaging in more on-farm processing, food service and agro-tourism activities. Others were actively seeking to improve quality, and in part, to accompany the shift towards more direct marketing, to establish their own brand and/or to develop new markets. Others, through improved on-farm management and the introduction of new technologies were looking to reduce costs.

	Ν	%
Engaging in more direct marketing	7	23.3
Continuously improve quality	5	16.7
Reducing costs	4	13.3
Downsizing	3	10.0
Establish own brand	3	10.0
Explore new markets	3	10.0

Table 4: What producers were doing to reduce impact of external economic forces on their business

Diversifying	2	6.7
Using innovative technologies	2	6.7
Increasing wages to retain employees	2	6.7
Improving management	2	6.7
Use social media to promote the business	2	6.7
Plant improved varieties	2	6.7
Implementing more sustainable production	1	3.3
Removing orchard	1	3.3
Employing family labour	1	3.3
Exploring lease options	1	3.3
Robotics	1	3.3
Working longer hours	1	3.3
Disengage/withdraw from non viable export markets	1	3.3
Expand as cash flow allows	1	3.3
Replanting orchard	1	3.3
Contact new suppliers	1	3.3
Build long-term relationships with buyers/customers	1	3.3
Improve productivity	1	3.3
Look to secure grants	1	3.3
Increase market share	1	3.3
Get advice	1	3.3
Contact government ministers/officials	1	3.3
Improve post harvest storage and handling	1	3.3
Integrate supply chains	1	3.3
Improve packaging to increase shelf life	1	3.3
Reduce use of hazardous chemicals	1	3.3
Reduce labour	1	3.3
Ν	30	

However, the implementation of new technologies was often problematic, for in WA, there was not only a lack of suitable machinery and equipment, but also the technicians to provide technical support and to service that equipment and machinery (Table 5).

Table 5: Production/Technological constraints at the producer level

	Ν	%
Lack of equipment/machinery	2	6.7
No technical support	1	3.3
Lack of people to service machinery	1	3.3
No benchmarks	1	3.3
Lack of high quality telecoms/internet in rural areas	1	3.3
Ν	30	

In rural areas, the lack of a fast and reliable internet service impeded the introduction of smart farming systems in both the field and/or the packing house.

From the growers' perspective, the key social constraint was the poor perception of the industry (Table 6). This manifested itself in multiple ways: the first was the lack of labour, for few young people were choosing to enter the industry. In rural areas, careers in the mining industry were not only more stable but more highly remunerated. The second issue related to the absence of any social license. Given the widespread use of agricultural chemicals to control pests and diseases, competition for water, and the contamination of aquifers from both organic and inorganic fertilizers, many consumers had a very negative attitude towards intensive agriculture. Few consumers understood or appreciated the many activities that growers undertook to make their operations more sustainable.

Table 6:	Social	constraints	at t	he	producer	level
	000101	CONSTIANTS	arı	.i iC	producer	10,001

	Ν	%
No social license	1	3.3
Lack of labour	1	3.3
Poor industry perception	1	3.3
Competition from mining	1	3.3
Ν	30	

For fresh fruit and vegetable growers, climate variability and changing rainfall patterns were perceived to be the most significant environmental constraints (Table 7). For fruit growers, as average temperatures were steadily increasing, it was becoming more difficult to achieve adequate winter chilling, thus adversely affecting blossom and fruit set. Higher temperatures later in the season and the increasing incidence of summer rain were adversely impacting quality and shelf life. Although most growers had access to irrigation, the lack of rainfall negatively impacted the amount of blossom in the bush and hence the amount of food available to native birds. As a consequence, more producers were reporting significant damage to fruit crops, particularly from declared species.

Table 7: Environmental constraints at the producer level

	N	%
Climate variability	6	20.0
Lack of rainfall/water	4	13.3
Increasing temperature	2	6.7
Impact of chemicals on non target species	1	3.3
Residential land development	1	3.3
Bird damage	1	3.3
High cost of water	1	3.3
Lack of plastic recycling	1	3.3
Increasing summer rainfall	1	3.3
Control of declared species	1	3.3
Ν	30	

With most growers cognisant of the impact their actions were having on the environment, particularly with regard to the application of chemicals, most fresh fruit and vegetable growers had implemented one or more sustainable farming practices (Table 8). Most were seeking to use water more efficiently, while others were engaged in the development of local water resources or negotiations to purchase additional water licenses. Others were adjusting their cropping patterns through the planting of more drought resistant varieties, trialling new varieties, and/or planting new varieties that were either earlier or later maturing.

	Ν	%
Use water more efficiently	2	6.7
Reduce use of hazardous chemicals	2	6.7
Member of Enviroveg	1	3.3
Implementing regenerative farming	1	3.3
Integrated pest control	1	3.3
Planting drought resistant varieties	1	3.3
Monitor weather more closely	1	3.3
Develop local water resources	1	3.3
Trial new varieties	1	3.3
Shift to a new location	1	3.3
Adjust business plan	1	3.3
Plant earlier/later maturing varieties	1	3.3
Buy water licenses	1	3.3
Training and education	1	3.3
Use bird deterrents	1	3.3
Protected cropping	1	3.3
Ν	30	

Table 8: What producers were doing to reduce the impact of environmental constraints

Some producers were actively looking to relocate and/or to expand to new locations that were more climatically suited to the intended crops. To deal with the increasing problem of birds, in addition to the use of bird deterrents, some fruit growers were moving to protected cropping (net houses), while, in order to achieve better control of the climate, many vegetable growers were contemplating production in environmentally controlled greenhouses. To reduce the need to apply hazardous chemicals, some growers had introduced integrated pest and disease management systems.

The only legal constraint to emerge was the new occupational health and safety regulations that had recently been introduced by the Commonwealth Government. As an industry, agriculture has the highest work-related fatality rate (13.1 per 100,000) in Australia (Safe Work Australia, 2021). The introduction of the new legislation required employers to ensure that all employees had been adequately trained in how to safely use all agricultural equipment and machinery, for in the event of serious injury and even death, employers could be prosecuted.

Fresh Fruit and Vegetable Retailers

Retailers spoke only about two groups of constraints: political and economic. While issues such as food waste and packaging could also be classified as environmental, minimising food waste was of much greater importance in improving profitability. Similarly, reducing the use of plastic packaging was also seen as economic constraint, for in WA, few alternatives were available and for those alternatives that were available, they were much more expensive.

At the retail level, the most significant political constraint was the perceived lack of any long-term planning by government (Table 9). This was manifested at two levels: at the grower level, retailers were concerned by the diminishing amount of support available to local growers. More of the smaller growers - particularly in periurban areas - were exiting the industry and selling their property for residential and industrial development, and this was impacting negatively upon the supply of fresh produce.

Table 9: Political constraints at the retail level

	Ν	%
No long-term planning	2	10.5
Poor town planning [retail competition]	2	10.5
Inconsistent quarantine regulations	2	10.5
Lack of labour	1	5.3
Increasing government debt	1	5.3
Constant threat of lockdowns	1	5.3
Inadequate sampling of chemical residues	1	5.3
Diminishing government support	1	5.3
Deregulation of shopping hours	1	5.3
Urban encroachment	1	5.3
Banning of chemicals/use of organic manures	1	5.3
Ν	19	

Poor town planning and the deregulation of shopping hours had made it more difficult for small independent retailers to compete with the supermarkets. Many independent retailers spoke of the lack of any long-term planning by local authorities who were constantly approving new applications from supermarket operators. As the population in Perth was expanding only at a very modest rate, the market was also expanding slowly, hence, as new supermarkets became operational, they were simply taking patronage away from other retailers - including other supermarket chains - and with the increased competition - driving prices down. In turn, this was negatively impacting the proportion of the retail price that growers were able to achieve which, in turn, negatively impacted profitability at the farm level. In effect, as the turnover of individual stores declined, so did the profitability of the entire sector.

Several retailers expressed concerns at what appeared to be the inconsistent exercise of quarantine regulations that impacted the supply of fresh produce from both interstate and overseas suppliers. This often meant that retailers were unable to procure a sufficient supply of seasonal products to meet the anticipated demand.

At the retail level, the lack of an adequate supply of fresh produce was the key constraint, attributed in part to the lack of labour at the farm level, but also to the adverse seasonal conditions: high summer temperatures and heavy rains (Table 10).

Table 10: Econo	omic constrai	nts at the	retail level
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	Ν	%
Lack of product/supply	16	84.2
Lack of labour	11	57.9
Increasing prices	11	57.9
Poor/declining quality	9	47.4
Declining profit margins	6	31.6
High cost of transport	5	26.3
Increasing cost of inputs	4	21.1
Competition	4	21.1
Numbers of producers declining	3	15.8
High cost of alternative packaging	3	15.8
Rising cost of utilities	3	15.8
Lack of customers	3	15.8

Power of supermarkets	2	10.5
Price instability	1	5.3
Non availability of alternative packaging [to plastics]	1	5.3
Lack of funds for investment	1	5.3
Lack of domestic processing facilities	1	5.3
Poor grading	1	5.3
Irrigation too expensive	1	5.3
Increasing cost of Eastern States product	1	5.3
Falling demand	1	5.3
Shoplifting/theft	1	5.3
Emergence of secondary wholesalers	1	5.3
Ν	19	

However, not only was the supply constrained, but the quality of the fresh fruit and vegetables available for sale had also fallen. The increasing prices of fresh fruit and vegetables at the wholesale level were detrimentally impacting the bottom line for most retailers. With most stores reporting some consumer resistance to the increased prices, retailers were being forced to reduce their profit margins, often selling at cost, or in other instances, cutting and selling the product in portion sizes at prices that would meet consumers expectations. At the same time, rents were increasing, the cost of utilities were increasing, the cost of transport and the cost of labour were increasing, with many small independent retailers reporting that they were in a very precarious financial position.

Given the proposed legislation banning the use of plastic packaging, many retailers expressed concern. While paper bags were available for some products, they were not considered suitable for leafy green vegetables and were completely unsuitable for pre-cut fruit and vegetables. Currently, few alternatives were available, supply was inconsistent, and the prices of substitute packaging materials were simply too expensive.

In responding to these economic constraints, most fresh fruit and vegetable retailers had diversified and extended their product range and were now selling processed meats, dairy products, canned, dried, and bottled foods, juices, frozen foods and even pet food and/or seafood (Table 11). As a large number of the independent fresh fruit and vegetable stores were owned and operated by Asian and Middle Eastern migrants, many were specializing in the provision of exotic foods, including rice, noodles and the many condiments, spices and other ingredients, whether fresh, frozen, dried, canned or bottled that were necessary in the preparation of these exotic meals.

To reduce the amount of waste, most retailers were purchasing daily and rotating product on the shelf. Wherever possible, when the product was no longer fresh or the quality had declined, it was either offered as a pre-packed product at a considerable discount, sold as a pre-cut portion or within a semi-prepared meal solution such as stir fries or soup mixes. Other retailers were focused on improving both the quality of the product purchased and offered for sale and/or the quality of the service that they offered, for by engaging with consumers and providing information about how to use the product, how to store it, and when it was in season, they could differentiate themselves from the supermarket chains.

To ensure supply, given that the number of fresh fruit and vegetable growers was declining, retailers were purchasing from multiple suppliers, which included both wholesalers and growers, with many retailers choosing to establish long-term relationships with growers to facilitate direct supply.

	Ν	%
Extending product range	8	42.1
Minimizing/reducing waste	8	42.1
Using multiple suppliers	7	36.8
Focus on quality rather than quantity	6	31.6
Purchasing daily	6	31.6
Differentiate	6	31.6
Pre-ordering [from wholesalers/growers]	5	26.3
Improve service	5	26.3
Engaging in more direct buying	4	21.1
Offer precut/prepacked produce	4	21.1
Working longer hours	3	15.8
Establishing long-term relationships with suppliers	3	15.8
Rotate product on the shelf	3	15.8
Trading 7 days to catch gap in supermarket trading hours	2	10.5
Communicate/engage with customers	2	10.5
Reduce price margins	2	10.5
Compare prices at other retail outlets	2	10.5
Focus on value	2	10.5
Vary quantity purchased to match demand	2	10.5
Offer samples to consumers to taste	2	10.5
Sell at cost	2	10.5
Use paper bags	2	10.5
Promote local product	2	10.5
Promote frozen when product is not in season	2	10.5
Reduce plastic packaging	2	10.5
Training employees	1	5.3
Providing online sales	1	5.3
Engage younger generation	1	5.3
Investing in new infrastructure	1	5.3
Increase display area	1	5.3
Teach sustainable farming	1	5.3
Contact new suppliers	1	5.3
Continuously improve quality	1	5.3
Support community	1	5.3
Buy from the Eastern States	1	5.3
Buy local	1	5.3
Accept lower quality product to have product on shelf	1	5.3
Educate consumers	1	5.3
Use imported product to extend seasonality	1	5.3
Compost waste	1	5.3
N	19	

Table 11: What businesses at the retail level were doing to address the economic constraints

With many retailers reporting a significant reduction in the amount of foot traffic, it was apparent that post-COVID, a greater number of consumers were now purchasing their fresh fruit and vegetables online. To respond, some retailers had now established a website where consumers could pre-order and collect the fresh fruit and vegetables they required. Others even offered to deliver the produce.

The more widespread use of social media also provided a means of communicating with consumers, advising them when the product was in season, the supply was tight or constrained, quality was either at its peak or had been compromised, and for those consumers who still engaged in home processing, when the prices were low. Providing recipes was also seen as a way of promoting the use of many new products that were less well known to many consumers.

As retailers are the final link in the chain, they are the best positioned to report on their interactions with household buyers. Consumers generally wanted more information: they wanted to know where the product was from, why prices were so high, when the product was in season and in some instances how to use and/or store the product (Table 12).

	1	1
	N	%
Where product is from	7	36.8
Little/no demand for sustainable product	7	36.8
Demand local	6	31.6
Why prices are so high	6	31.6
Consumers want more convenient products	5	26.3
When product is in season	3	15.8
Freshness	3	15.8
Consumers are more price conscious	3	15.8
Consumers want value for money	3	15.8
Consumers want more information	2	10.5
Consumers buying less	2	10.5
Buying smaller quantities more often	2	10.5
Demand for healthy food increasing	2	10.5
Consumers are more quality conscious	2	10.5
How to use product	2	10.5
Want to connect to farmers	2	10.5
Organic too expensive	2	10.5
Consumer price resistance	2	10.5
Importance of sustainability varies with product	2	10.5
Price discounting by supermarkets	2	10.5
Purchase local when quality is on par with Eastern States product	1	5.3
Consumers seldom seek information	1	5.3
Demand is increasing	1	5.3
Buy on appearance	1	5.3
Peak sales are in the weekend	1	5.3
Young consumers cook less	1	5.3
Pay more for local	1	5.3
Why product is not available	1	5.3
Online sales are increasing	1	5.3
Lower socio-economic groups eat less fruit/vegetables	1	5.3
Good taste	1	5.3
Gourmet cooking	1	5.3
Eating more meals at home	1	5.3
Want to support local growers/small business	1	5.3

Table 12: Consumer marketing trends/issues in the fresh produce industry

Consumers are more informed [social media]	1	5.3
Price is not an issue – consumers can pay	1	5.3
No consumer loyalty	1	5.3
Misinformation [on social media]	1	5.3
Difficult to differentiate in a price sensitive market	1	5.3
No generic branding/promotion	1	5.3
Ν	19	

Given WA's isolation from the Eastern States and the considerable distance fresh produce had to travel, there was a marked preference for local WA product, with many consumers wanting to reconnect with local growers. However, the quality of the local product had to be comparable to imported product, for consumers, by and large, were becoming more quality conscious. Furthermore, as consumers were looking for the best value, the price of local product had to be comparable to imported product. Hence there was no price premium for local food.

In urban areas there was a clear demand for convenience products. Despite the substantially higher cost, consumers were willing to pay for prepared salad mixes, and stir fry and soup mixes that reduced the amount of time involved in the preparation of meals. The trend towards more healthy eating, diet and nutrition was encouraging the sales of fresh fruit and vegetables, However, it was also apparent that a greater number of consumers were purchasing less fruit and vegetables - in part because of the high price - but more so because consumers were purchasing more frequently. This resulted in consumers having better access to fresh fruit and vegetables, have reduced the amount of wastage in the home.

Given the desire to facilitate and encourage a more sustainable industry, it was disappointing to learn from the retailers that for the mainstream market there were no price premiums for sustainably grown product. While a small number of growers were certified organic, the amount of product available was small and the supply inconsistent. However, for most households, the significantly higher cost of organic produce was a barrier to purchase. As prices were already high and as the cost of utilities, rent and/or mortgage repayments and fuel were rising, many households were reducing their consumption of fresh fruit and vegetables.

Government Action to Reduce Constraints in the Fresh Fruit and Vegetable Industry

In supporting the fresh fruit and vegetable industry, growers saw an opportunity for government to provide incentives to facilitate and encourage more sustainable farming practices (Table 13). In part, this included a reduction in the use of hazardous chemicals, providing better access to water rights, getting serious about climate change, and reviewing and revising the legislation associated with declared species.

	Ν	%
Provide more support for local producers	4	13.3
Curb/control power of supermarkets	3	10.0
Provide incentives for more sustainable agriculture	2	6.7
Reduce red tape	2	6.7
Communicate/consult with industry	2	6.7
Look at things holistically	2	6.7
Reduce use of hazardous chemicals	2	6.7
Provide more backpackers	2	6.7
Upgrade rural roads	2	6.7

Table 13: What government needs to do to address the political constraints

Lower cost of rates	2	6.7
Allow on-farm quarantine	1	3.3
Facilitate development of new markets	1	3.3
Better weather forecasting	1	3.3
Support new breeding programs	1	3.3
Get serious about climate change	1	3.3
Listen	1	3.3
Reduce costs of inputs	1	3.3
Prioritize farming over mining	1	3.3
Reduce OHS requirements	1	3.3
Establish local trading hubs	1	3.3
Provide better access to water rights	1	3.3
Avoid duplication of rules and regulations	1	3.3
Streamline compliance	1	3.3
Upgrade farmers knowledge of sustainable farming practices	1	3.3
Provide more support to WA food industry	1	3.3
Invest in water infrastructure	1	3.3
Define land use	1	3.3
Ease visa requirements	1	3.3
Provide tax incentives on capital investment	1	3.3
Restore business confidence	1	3.3
Support more regional R&D programs	1	3.3
Review/revise declared species legislation	1	3.3
Provide incentives for rural accommodation [for workers]	1	3.3
Facilitate access to credit	1	3.3
Assist businesses to implement regulations	1	3.3
Chemical registration to protect consumers	1	3.3
N	30	

Prior to the implementation of new legislation, particularly with regard to plastic packaging, fresh fruit and vegetable growers wanted government to look at things more holistically, and to communicate and consult with industry.

However, the single most important issue where growers sought government intervention was in curbing/controlling the power of supermarkets. The increasing power of the supermarkets was perceived by most producers to be threatening their livelihoods. Post-COVID, the costs of chemicals, fertilisers, fuel, packaging and labour were rapidly increasing and yet supermarkets, by and large, were continuing to push prices down, with some actively engaged in price discounting. As the industry was very reliant on manual labour, the economies of scale were becoming increasingly harder to achieve. Furthermore, not only were the supermarkets demanding better quality, but the costs of compliance were continuing to increase, with those growers who wished to supply the major supermarkets being required to have at least two third-party certified quality assurance systems. Recent changes to the OHS legislation and the need for producers to comply with the Modern Slavery Act 2018 had also introduced another layer of complexity.

Many retailers also sought government support to review and revise competition policy and to improve town planning (Table 14). Others looked to government for greater support in easing and facilitating immigration policy to provide more backpackers and seasonal workers at the farm level, thus easing both the supply constraint and the decline in quality many retailers were experiencing.

	Ν	%
Curb/control power of supermarkets	5	26.3
More backpackers/seasonal workers	4	21.1
More support for local producers/small business	4	21.1
Educate consumers	4	21.1
Review competition policy	4	21.1
Support farmers	3	15.8
Provide support for the adoption of Freshcare	3	15.8
Reform transport sector	2	10.5
Improve town planning	2	10.5
Greater collaboration	1	5.3
Control prices	1	5.3
Regulate online sales	1	5.3
Review Centrelink > more incentives to work	1	5.3
Clear policy/strategy for the food industry	1	5.3
Reduce payroll tax for small business	1	5.3
Provide incentives to food producers	1	5.3
More timely approval processes	1	5.3
Regulate/enforce truth in labelling	1	5.3
Financial incentives for value-added processing	1	5.3
Promote local [WA] produce	1	5.3
Encourage more people to choose ag as a career	1	5.3
Prioritize farming over mining	1	5.3
Rent freeze	1	5.3
More training for farmers on the use/application of chemicals	1	5.3
Ν	19	

Table 14: What government needs to do to address political constraints at the retail level

Given two recent highly publicised cases of foodborne illness, both of which were attributed to the fresh produce industry, several retailers wanted to see more farmers accredited under the industry quality assurance program Freshcare. However, as there were no price incentives and as many growers were reluctant to adopt such programs, several retailers saw a role for government to facilitate the uptake of quality assurance systems in the public interest.

Others foresaw a role for government in educating consumers. This too was apparent at multiple levels - consumers wanted to know where the product was from, hence many retailers spoke about the need to actively promote and support local growers through, for example, generic branding campaigns that not only highlighted the local nature of the product, when it was in season, but also how it had been produced. Others saw a need for generic marketing campaigns to enhance the consumption of fresh fruit and vegetables given the improved health and nutrition outcomes and the immediate need to reduce the burden of food and diet-related illness on the public health system.

Broadacre Agriculture Production [Mixed Cropping and Pastoralists]

For mixed cropping enterprises and pastoralists, the most frequently mentioned political constraint was the excessive amount of bureaucracy (Table 15).

	Ν	%
Too much red tape	6	18.2
Lack of government understanding	4	12.1
Diminishing government support	3	9.1
Market access	3	9.1
Industry bodies not unified	3	9.1
Unable to enact sustainable solutions	3	9.1
Ban of live exports	3	9.1
Process takes too long to extend pastoral leases	3	9.1
Land tenure/native title	2	6.1
No long-term planning	2	6.1
Import tariffs	1	3.0
Lack of leadership	1	3.0
Government making decisions on the run	1	3.0
Short-term lease on pastoral properties	1	3.0
Business uncertainty	1	3.0
No social license	1	3.0
Too many audits [for pastoral lease properties]	1	3.0
No policy on carbon	1	3.0
Urban encroachment	1	3.0
EU restrictions on sustainability	1	3.0
Too difficult to get certification	1	3.0
High costs of dealing with bureaucracy	1	3.0
Inconsistent quarantine regulations	1	3.0
Lack of data for long-term decision making	1	3.0
Competition from mining rights	1	3.0
Increasing government debt	1	3.0
Privatisation of ports	1	3.0
Ν	33	

Table 15: Political constraints for mixed cropping enterprises and pastoralists

There was a widespread belief that government did not truly understand the many challenges that farmers faced. The amount of government support offered to the industry was declining, with government perceived as having no long-term plan for the industry and often making decisions on the run.

For the pastoralists, there were a number of issues. Many spoke of the inordinate amount of time it took to renew their leases and the high costs associated with the process. Furthermore, the short-term duration of the leases did not support or encourage long-term investments in more sustainable farming practices. For others, the inability of government, at both a Commonwealth and State level, to have a unified policy on the trading of carbon credits prevented farmers from pursuing an additional income stream. Others spoke of problems associated with native title and the introduction of the Aboriginal Heritage Act which would place additional constraints on their farming operations.

For all farmers raising livestock, the impending legislation to ban the export of live cattle and sheep was particularly troublesome. Over many years, while the industry had taken all necessary steps to improve animal welfare, public perception, it seemed, was more influential than the voice of the farmers. At an industry level, many spoke of the difficulties in being able to lobby government, for the many industry bodies that represent the sector were not unified in their approach or in their dialogue.

Given the large amount of grain that is exported from WA, the imposition of import tariffs for the entry of barley into the Chinese market and the need for grain producers to have International Sustainability and Carbon Certification to enter the European market had reduced WA competitiveness in international markets.

To address many of these impediments, the various farmer associations were undertaking activities such as policy advocacy, facilitating market access and addressing supply chain constraints. Through the statutory research and development corporations, funds were being expended to identify downstream customer needs and in other instances, new varieties were being evaluated for their potential to better meet the needs of institutional buyers (Table 16).

	Ν	%
Undertaking research	7	21.2
Policy advocacy	6	18.2
Facilitating market access	4	12.1
Addressing supply chain constraints	4	12.1
Addressing land tenure/native title	3	9.1
Trialling new varieties	3	9.1
Identifying consumer needs in end markets	3	9.1
Providing advice on improved land management	2	6.1
Conducting field days/workshops	2	6.1
Facilitating access to finance/grants	2	6.1
Providing information on OHS requirements/employee awards	2	6.1
Providing advice on border closures	1	3.0
Promoting best practice	1	3.0
Strength in numbers	1	3.0
Facilitating recruitment of overseas workers	1	3.0
Improving productivity	1	3.0
Enhancing international competitiveness	1	3.0
Conducting cost-benefit studies	1	3.0
Providing market intelligence	1	3.0
Improving animal welfare	1	3.0
Conduct market tours	1	3.0
Offer advice on pest control/evasive species	1	3.0
Ν	33	

Table 16: What farmer associations were doing to address the political constraints

Others were actively addressing issues such as land tenure and native title, providing advice on improved land management, conducting field days and workshops, and offering advice on pest and disease control. With recent changes to the OHS legislation and awards, other farm groups and associations were advising their members and/or, in other instances, lobbying government to increase the number of seasonal workers available to address the labour constraint.

The lack of labour was identified as the key economic constraint adversely impacting the sector. Coming out of the drought, while prices for both beef and lamb were increasing, the quality of the livestock available for slaughter was perceived to have fallen. However, having a much broader impact was the rising cost of inputs (chemicals, fertilisers, and fuel), the increasing cost of transport, the high cost of replacement stock and the high cost of new machinery. In turn, this was adversely impacting the ability of farmers to access credit and thus the funds that they had available for capital investments (Table 17).

	Ν	%
Lack of labour	12	36.4
Increasing cost of inputs	6	18.2
Low prices	4	12.1
Poor/declining quality	3	9.1
High cost of transport	3	9.1
Lack of domestic processing facilities	3	9.1
Limited funds for investment	2	6.1
Difficulty in securing loans	2	6.1
High cost of replacing stock	2	6.1
Administration costs are increasing	2	6.1
Cost-price squeeze	2	6.1
Rising cost of machinery	2	6.1
Non availability of chemical fertilisers	1	3.0
Low stock numbers	1	3.0
Lack of product/supply	1	3.0
High cost of shipping/containerisation	1	3.0
Logistics	1	3.0
Increasing costs of production	1	3.0
High costs of fencing	1	3.0
No wholesale market	1	3.0
No financial incentive to support sustainable farming	1	3.0
Irrigation too expensive	1	3.0
Lack of accommodation for workers	1	3.0
Unable to achieve economies of scale	1	3.0
Can't compete with wages paid in mining	1	3.0
Declining economies of scale	1	3.0
Government support declining	1	3.0
Lack of seasonal workers	1	3.0
Ν	33	

Table 17: Economic constraints for mixed cropping enterprises and pastoralists

For some farmers, concentration and aggregation in the meat processing sector was reducing the number of buyers and hence the competition in the market. Others felt that in the absence of sufficient and readily accessible meat processing facilities, market opportunities were being lost.

In addressing the economic constraints, through the various levy paying research and development corporations, many farmers were seeking to improve both on-farm productivity and the quality of their outputs (Table 18).

	Ν	%
Technological innovation/R&D	5	15.2
Doing more on-farm processing	4	12.1
Control quality/quantity of production	3	9.1
Diversified	3	9.1
Using carbon credits to enhance farm viability	3	9.1
Target marketing	3	9.1
Employee trainees	2	6.1
Rethinking the business model	2	6.1
Introduced integrated weed management	2	6.1
Improved on-farm planning	2	6.1
Improved on-farm management	2	6.1
Maintaining old machinery	2	6.1
Developing own brand	2	6.1
Developing niche markets	2	6.1
Finish off on a second property	1	3.0
Feedlotting	1	3.0
Manage stock numbers in proportion to feed available		3.0
Introduced integrated pest control	1	3.0
Importing skilled labour	1	3.0
Robotics	1	3.0
Forward buying	1	3.0
Implemented precision agriculture	1	3.0
Implementing more sustainable farming practices	1	3.0
Capturing carbon credits	1	3.0
Vaccinate staff	1	3.0
Reduced number of livestock	1	3.0
Differentiate	1	3.0
Focus on quality rather than quantity	1	3.0
Delayed plans for expansion	1	3.0
Crop rotation	1	3.0
Ν	33	

Table 18: What farmers were doing to reduce the impact of economic forces on their business

Others had chosen to diversify their on-farm operations, moving into more on-farm value-added processing, developing their own brands, or targeting specific customer groups. For some, the carbon market was providing an opportunity to revegetate those parts of the farm that were unsuitable for either pastures or crops. Others were addressing and improving their on-farm management and planning, and in some instances, even rethinking their business models.

Other farmers were introducing integrated pest and disease and/or weed management programs, improved crop rotations, precision farming and variable rate technologies to reduce the costs of chemicals and fertilisers. Given the high costs associated with the purchase of new farm equipment and machinery, others were doing their best to maintain old machinery in good working order. Where livestock were an integral part of the farm, most farmers were looking towards improved grazing management systems to match the number of livestock to the amount of feed available, to finish animals off on a second property and for others to establish feedlots.

In looking at the social constraints, farmers focussed on both the health of their communities and their own wellbeing (Table 19).

	Ν	%
Farmers lack self-belief	2	6.1
No social license	2	6.1
Declining rural population	2	6.1
Mental health	2	6.1
Lack of capacity/unskilled labour	2	6.1
Poor industry perception	1	3.0
Increasing OHS requirements	1	3.0
People don't want to live in rural areas	1	3.0
High cost of training employees	1	3.0
Competition from mining	1	3.0
Animal liberationists	1	3.0
Ν	33	

Table 19: Social constraints for mixed cropping enterprises and pastoralists

Farming is a difficult and very demanding occupation, with farmers needing to respond to significant seasonal variations. Prolonged periods of drought, low prices and constantly dealing with risk and uncertainty was leading many farmers to doubt their own abilities. While seldom talked about in rural communities, mental health was declining, aggravated in part by the isolation and lack of appropriate services.

With greater urbanisation, rural townships were generally in decline, and hence it was becoming more difficult for farmers to attract the labour that they required. Furthermore, the situation had been aggravated by the inability of farmers to match the wages paid by the mining industry and the lack of suitable accommodation, especially for families, in rural WA. The workforce was aging and failing to attract young people, while in parallel, new occupational health and safety legislation was impacting on the cost of training new employees and the need to provide a safe working environment.

Other farmers spoke of the lack of any social license. With most consumers residing in an urban environment, few consumers had any knowledge of farming - they simply expected their food to be available wherever and whenever they wanted to eat. Few understood that most farmers were the custodians of the land upon which they operated and most either had or were in the process of adopting more sustainable production techniques to reduce the negative impact of grazing on the environment. Animal welfare was not an option for farmers, as the productivity of the animals and the quality of the resultant meat was directly impacted by how well the animals had been treated on the farm and how well they had been transported to market. Hence the actions of misinformed animal activists were not only undermining the community's perception of farmers, but their covert efforts to gain access to livestock threatened biosecurity on the farm.

In seeking to improve on-farm productivity, and in particular, the adoption of smart farming technologies, the most significant constraint was the poor internet and telecommunication service available in many rural communities (Table 20). With most livestock producers using a variety of technologies to match the stocking rate to the availability of feed and monitoring the movement of cattle, the lack of any broadband connection meant that farmers had to use satellite communication which not unexpectedly incurred significant cost.

	N	%
Lack of internet/poor telecommunications	3	9.1
Pest control	2	6.1
Micro-nutrient toxicity	1	3.0
Need for more research	1	3.0
Match stocking rate to carrying capacity	1	3.0
Birds	1	3.0
Low productivity	1	3.0
Lack of skills/capacity	1	3.0
Little support from government	1	3.0
Wild dogs	1	3.0
Lack of appropriate feed supplements	1	3.0
Consumers non acceptance of GM technology	1	3.0
Ν	33	

Table 20: Technological constraints for mixed cropping enterprises and pastoralists

Other farmers were experiencing difficulties in controlling pests and accessing appropriate feed supplements to address the micro-nutrient deficiencies and/or toxicities that were present in many WA soils. In other areas, the increasing prevalence of wild dog attacks on livestock had forced farmers to abandon sheep production on the rangelands.

The farmers response to the technological constraints was largely dependent on the nature of their farming activity. For those engaged in mixed cropping, the different soil profiles had been mapped on the farm to enable farmers to benefit from the implementation of precision farming and variable rate technologies (Table 21).

For livestock producers, rotational grazing and the use of electronic ear tags allowed farmers to monitor and control stock movements according to the amount of feed available. Others sought to provide feed supplements and where they could, to grow fodder crops to improve the amount of feed available to livestock. To ensure livestock had access to water, solar water pumps were being utilised by many farmers. Others sought to improve the quality of their herds through selective breeding.

Table 21: What farmers were doing to improve productivity

	Ν	%
Using solar water pumps	3	9.1
Implemented VRT/precision farming	3	9.1
Using rotational grazing	3	9.1
Using electronic ear tags	2	6.1
Improving bloodlines	2	6.1
Sharing information through farm improvement groups	1	3.0
Mapped farm	1	3.0
Applying feed supplements	1	3.0
Growing fodder crops to supplement feed	1	3.0
Diversified	1	3.0
Use computerised stock records	1	3.0
Building own communication tower	1	3.0
Benchmarking	1	3.0
Using remote monitoring	1	3.0

Irrigating	1	3.0
Undertaking own R&D	1	3.0
Targeted application of chemicals	1	3.0
Less stress stock handling techniques	1	3.0
Using satellite imagery to monitor feeding	1	3.0
Modified cattle yards to accommodate multiple species		3.0
Ν	33	

Not unexpectedly, climate variability was the most frequently cited environmental constraint, followed by the lack of rainfall (Table 22). As the majority of grain crops are grown in WA without irrigation, yields were very dependent on the winter rainfall. Similarly, for those raising sheep and cattle, in the absence of irrigation, rainfall was a key determinant impacting the amount of feed available.

Table 22: Environmental constraints for mixed cropping enterprises and pastoralists

	Ν	%
Climate variability	10	30.3
Lack of rainfall/water	5	15.2
Wild dogs	2	6.1
Land degradation	2	6.1
Lack of feed	2	6.1
Fire	2	6.1
No benchmarks	1	3.0
Declining ground water quality	1	3.0
Over grazing	1	3.0
Erosion	1	3.0
Increasing greenhouse gas emissions	1	3.0
Weak/fragile soils	1	3.0
Impact of agricultural chemicals on non target species	1	3.0
Competition for feed from wild animals	1	3.0
Loss of biodiversity	1	3.0
N	33	

When feed was scarce, competition from wild animals such as kangaroos reduced the amount of feed available to livestock, while wild dogs presented a direct threat to the health and wellbeing of sheep.

Historically, over cropping and over grazing had resulted in significant land degradation and erosion, due, in part, to the fragile nature of the soils in WA. Water quality had also declined in many rural areas as a result of land clearing and rising salinity. The clearing of land for pastures had also reduced wildlife habitats leading to a loss in biodiversity.

In summer, with increasing temperatures and a reduction in rainfall, the increasing incidence of severe bushfires put crops, livestock and the farm infrastructure at risk.

To address some of the key environmental constraints, farmers were adopting a number of improved on-farm and land management techniques. While some were adding various materials to improve soil structure and its water holding capacity, others were practising no till farming, using precision agriculture and variable rate technologies to minimise the quantity of fertilisers applied, or seeding over a longer period to benefit from the shifts in rainfall patterns (Table 23).

	Ν	%
Improved on-farm decision making	3	9.1
Destocking	2	6.1
Fencing	2	6.1
Soil amelioration	2	6.1
Using solar panels to pump water	1	3.0
Seeding over a longer period	1	3.0
No till farming	1	3.0
Planting perennial grasses	1	3.0
Better management of bushland	1	3.0
Install firebreaks	1	3.0
Using better land more intensively	1	3.0
Culling wild animals	1	3.0
Benchmarking	1	3.0
Rotational grazing	1	3.0
Controlling wild dogs	1	3.0
Ν	33	

Table 23: What farmers were doing to reduce the impact of environmental constraints

Livestock producers were using techniques such as rotational grazing and the planting of perennial grasses to increase the amount of feed available. In the event of prolonged drought, stock numbers were being reduced commensurate with the amount of feed available. Where necessary, wild animals were being culled not only to leave more feed for livestock, but also, from an animal welfare perspective, to prevent wild animals from starving to death.

Other farmers had chosen to fence off those parts of the farm that were no longer suitable for pastures or crops and had either actively replanted to benefit from the carbon market, to combat salinity, or were simply allowing native vegetation to regrow and to restore biodiversity.

The most frequently cited legal constraint related to the passing of legislation whereby farmers, as employers, could now be charged with manslaughter if an employee was killed while working on the farm (Table 24).

Table 24: Legal	constraints fo	or mixed	cropping	enterprises an	d pastoralists

	Ν	%
Manslaughter laws/OHS	2	6.1
Live export laws	1	3.0
Compliance	1	3.0
Tighter laws for trespass	1	3.0
Native title	1	3.0
Competition from mining	1	3.0
Ν	33	

However, farmers also had to contend with live export protocols, native title (which required farmers to protect significant indigenous sites from development), competition from mining, and the increasing extent to which animal activists were able to enter farms, ignoring biosecurity measures which are in place to protect the health and welfare of the livestock.

Broadacre Agriculture Retail Butchers

At the retail level, the key respondents were the small independent butchers operating across the Perth metropolitan area in both suburban shopping centres and the shopping malls.

For them, the two most frequently cited political or regulatory constraints were the proposed ban on the use of single use plastic bags and the lack of clarity associated with definitions as to what constituted free range and/or grass-fed meat (Table 25).

	Ν	%
Banning of single use plastics	2	11.8
Lack of clarity defining free range/grass fed	2	11.8
Constant threat of lockdowns		5.9
Updated Food Act	1	5.9
Foreign ownership of farms	1	5.9
Ν	17	

Table 25: Political constraints for retail butchers

For the retail butchers, no alternative cost-effective means for packing fresh meat, and minced meat in particular, had been identified. While waxed paper could be utilised for some cuts of meat, this was not suitable for minced meat and/or marinated meats because of the high moisture content of these products.

Truth in labelling was problematic in how it related to grass fed/pasture fed meat and both free range chickens and pork. While most livestock (sheep and cattle) are raised on pastures or native grasses and vegetation in WA, it is not unusual for livestock to be placed in feedlots to condition them prior to slaughter. In feedlots, livestock are usually fed a combination of hay, grain, or manufactured feed pellets. Hence, while livestock may have spent most of their life on pastures or rangelands, they might also have spent some time in feedlots.

There was a perception among some consumers that free range chickens and pork not only tasted better, but the living conditions for animals was also better. While it is true that the chickens and pigs have greater access to an outdoor environment, the feeding regimes could be vastly different, and the stocking densities could also be very different. Hence free range could mean many different things.

For the majority of retail butchers in WA, the key constraint was the lack of a sufficient supply of both beef and lamb meat, associated primarily with the decline in stock numbers and the lack of feed arising from the drought, and more recently, the impact of COVID-19 on the meat processing industry. Not unexpectedly, as most of the cattle and sheep produced in WA are pasture fed, the lack of feed had resulted in lower live weights and a perceived reduction in the quality of WA meat. In contrast, much of the beef imported into WA from Queensland had been grain fed. Not only was it regarded as being of better eating quality, but the quality was also more consistent (Table 26).

	Ν	%
Lack of product/supply	15	88.2
Lack of labour	11	64.7
Increasing cost of meat [beef/lamb]	10	58.8
Increasing cost of doing business	8	47.1
Declining profit margins		41.2
Competition	4	23.5

Table 26: Economic constraints for retail butchers

Increasing power of supermarkets	4	23.5
Financial hardship	3	17.6
Lack of customers		17.6
No wholesale price competition	2	11.8
High cost of transport	2	11.8
Poor quality of WA products	2	11.8
Adequate supply	1	5.9
Negative impact of drought	1	5.9
Export markets get priority	1	5.9
Price instability	1	5.9
On one to take over business	1	5.9
Seasonality	1	5.9
Competition from wholesalers selling direct 1		5.9
Lack of domestic processing 1		5.9
High cost of alternative packaging 1		5.9
Imposition of minimum quantities by wholesalers	1	5.9
Ν	17	

Irrespective of from where the meat had been sourced, the shortage of red meat had resulted in a marked increase in the wholesale price for both beef and lamb. With most retailers reporting some consumer resistance to the higher prices, many had been forced to reduce their price margins, thus reducing their profitability. In parallel, not only were rents increasing but the costs of doing business were also increasing.

For others, the high prices were attributed to the lack of competition in the meat processing industry. Having compared the prices across the many independent meat processors and wholesalers, many retailers were concerned by the lack of any meaningful difference in the price. Others spoke of the increased charges being levied by wholesalers and for some, the imposition of minimum quantities that put additional pressure on already depleted cash flows. While some small independent retailers had benefitted from the bulk quantity restrictions imposed by the supermarkets during the pandemic, once the supply had been restored, consumers had returned to the supermarket to purchase the majority of their meat. However, even post-pandemic, many retailers reported a marked reduction in the number of customers, with more consumers believed to be purchasing their meat online. Nevertheless, competition from the supermarkets and indeed even from wholesale suppliers who were now selling to consumers directly, either through a shop front or online, was making it all the more difficult to earn a living. Many were facing financial hardship and with no one willing to take over or to purchase the business, many faced a very uncertain future. Of particular concern was the lack of labour, with many small business owners finding it necessary to increase the number of hours worked.

To stay in business, most small independent butchers were focused on quality, attempting thereby to differentiate themselves from the supermarkets generic offer (Table 27). However, differentiation was being achieved not only by offering a superior quality product, but also a superior service. Many consumers it seemed sought advice from butchers on what cuts of meat were the most suitable for their intended meal. Other butchers offered to provide more convenient, pre-marinated meats and in some instances to provide entire precooked meals that simply required reheating. In part, these precooked meals, pies, sausages and salami also provided a means for using off cut meats or to dispose of meats that were no longer fresh. Reducing the amount of wastage had a significant and positive impact on profitability. In those instances where the product was not fit for human consumption, some butchers resorted to the provision of various fresh and frozen pet foods. For others, especially where the store was owned and operated by a migrant,

differentiation had been achieved through halal certification, thereby meeting the dietary requirements of a very specific segment of the market.

	Ν	%
Focus on quality	9	52.9
Reduce price margins	9	52.9
Extend product range	9	52.9
Improve service	9	52.9
Minimize waste	8	47.1
Differentiate	7	41.2
Use multiple suppliers	5	29.4
Working longer hours	4	23.5
Educate consumers	4	23.5
Establish long-term relationship with suppliers	3	17.6
Purchase in bulk	3	17.6
On-line sales	2	11.8
Provide more ready to eat meals	2	11.8
Minimize use of preservatives/natural	2	11.8
Promote local product	2	11.8
Buy from Eastern States	1	5.9
More processing at farm level	1	5.9
Trading seven days a week to capture gap in supermarket hours	1	5.9
Build long-term relationships with customers	1	5.9
Focus on value	1	5.9
Communicate with suppliers	1	5.9
Halal	1	5.9
More direct marketing from producers	1	5.9
Reducing overhead costs	1	5.9
Ν	17	

Table 27: What retail butchers were doing to address the economic constraints

With a growing amount of product available direct from farmers who were choosing to process their own livestock, in the more affluent areas of Perth, butchers were purchasing more product direct from these alternative suppliers and were actively promoting both the producer (brand) and/or the region.

Nevertheless, given the high wholesale prices for red meat and the consumer resistance to these prices, most butchers had found it necessary to reduce their price margins. As the costs of operating their business were increasing on all fronts, many were in a very precarious financial situation.

Consumers, it seems, were also struggling with the high prices, with many wanting to know why prices were so high. Indeed, many households had found it necessary to reduce their consumption of meat (Table 28).

Table 28: Consumer trends/issues in the WA meat industry

	Ν	%
Want to know where product is from	5	29.4
Why prices are so high	5	29.4

More quality conscious	5	29.4
Eating less meat	4	23.5
How to use the product	4	23.5
Little/no demand for sustainable meat products	4	23.5
Consumers becoming more conscientious/ethical	3	17.6
Freshness	3	17.6
Animal welfare	3	17.6
More convenient products	3	17.6
Prefer local WA product	3	17.6
Want fewer/less chemical preservatives	2	11.8
Want more information	2	11.8
Eating more meals away from home	2	11.8
Free range not an issue	2	11.8
Grass fed	2	11.8
Good taste	2	11.8
Organic too expensive	2	11.8
Consumer price resistance	2	11.8
Price not an issue	2	11.8
No price incentive for sustainable product	2	11.8
More price conscious	1	5.9
What's in the product [pies/sausages/convenience meals]	1	5.9
Free range	1	5.9
Product availability	1	5.9
Want to support local businesses	1	5.9
Purchase local product when quality is comparable/better than	1	5.9
When product is in season	1	5.9
Promoting regional brands	1	5.9
Misinformation on social media	1	5.9
Traceability	1	5.9
Increasing demand for vegetarian options	1	5.9
C neutral	1	5.9
Smaller families	1	5.9
Negative view of agriculture/bad press	1	5.9
Cant differentiate quality	1	5.9
Inconsistent supply	1	5.9
Consumers have little knowledge	1	5.9
More multicultural society	1	5.9
Ν	17	

Consumers were generally becoming more quality conscious and wanted to know where the product was from. Others wanted to know how to use the product. There was also an increasing demand for more convenient meal solutions such as marinated meats, kebabs, processed meats, and meat pies.

However, while consumers were perceived to be more concerned about issues such as animal welfare and free range, there was little to no demand for more sustainably produced meat products. With meat prices

already high, there was no price incentive for sustainably produced meat. Organic meat, in particular, was perceived to be too expensive, and the supply both limited and inconsistent.

Government Action to Reduce Constraints in Broadacre Agriculture

At the farm level, the two most frequently cited recommendations for government were to add agriculture to the school curriculum and to educate consumers (Table 29).

	Ν	%
Add agriculture to the school curriculum	6	18.2
Educate consumers	5	15.2
Increase transparency	3	9.1
Reduce red tape	3	9.1
Support more community visits	2	6.1
Improve knowledge of farming within government	2	6.1
Implement carbon farming	2	6.1
High quality telecoms/internet	2	6.1
Lack of infrastructure	2	6.1
Greater sanctions for animal liberationalists	2	6.1
Trust land managers	2	6.1
Collaborate	2	6.1
Make it easier for backpackers to enter Australia	2	6.1
Provide drought assistance	1	3.0
Provide clarity on carbon price	1	3.0
Establish systems to measure/report carbon sequestration	1	3.0
Provide more extension services	1	3.0
Look at things holistically	1	3.0
Support small producers	1	3.0
Support more regional R&D projects	1	3.0
Prioritise farming over mining	1	3.0
Price natural capital	1	3.0
Promote social license	1	3.0
Provide more point of sale promotional material	1	3.0
Have only one agriculture university in WA	1	3.0
Need an ethical on-farm quality assurance system	1	3.0
Promote industry to young people	1	3.0
Improve health and education services in rural/remote areas	1	3.0
Educate animal liberationalists	1	3.0
Provide more workplace OHS training	1	3.0
Ν	33	

Table 29: What government needs to do at the farm level to address the constraints

As an industry, agriculture was failing to attract a sufficient number of young people. Hence, at peak times of the year, the industry was very dependent on migrant workers. However, equally important, was the need to educate both children and their parents, about how the food they consumed had been produced. With most

consumers living in urban areas, they had become disconnected from food producers and the many challenges farmers faced in bringing them their food.

As custodians of the landscape, farmers wanted consumers to see all the practical things they were doing to regenerate degraded landscapes, encourage biodiversity and the way in which they handled livestock responsibly and ethically. Unfortunately, the efforts of a very small group of animal activists and unverified claims on social media were swinging public opinion. Farmers wanted government to strengthen the laws associated with trespassing to protect them and the biosecurity of their livestock from the covert activities of animal activists.

Some respondents even spoke about the claims being made by school teachers that livestock farming was contributing to climate change and therefore people should no longer eat meat. Nothing however could be further from the truth, for as reported by the FAO (2021a), grazing by livestock offsets carbon emissions by stimulating plant growth, which helps sequester carbon in the soil. In mixed farming systems, livestock make use of crop residues for feed and subsequently distribute animal manure as fertilizer. Furthermore, livestock play a critical role in food security, supplying around 33 percent of the protein consumed (FAO, 2021b). Meat, milk, and eggs, in appropriate amounts, are valuable sources of complete and easily digestible protein and essential micronutrients, with small amounts of animal-based food significantly improving not only the physical development of children, but also their cognitive and learning abilities.

One of the key areas where farmers sought some government intervention was price transparency. Although prices at the retail level were high, at the farm gate, the prices farmers received for their livestock were eroding. Within WA, the lack of processing capacity meant that farmers often faced delays in getting their livestock slaughtered. Where stock was under weight, the situation could be rectified by feed lotting, albeit at some cost, but where the product was overweight, the abattoirs often imposed penalties or downgraded the classification of the meat. Whereas the abattoirs could pass on the increased costs of operating to consumers, farmers could not.

Farmers also sought clarity from government around issues such as carbon pricing and the use of land for agroforestry and carbon farming. Many industrial corporations were purchasing prime agricultural land for the sole purpose of establishing plantations to offset their carbon emissions. Without appropriate controls, the loss of such prime farmland could potentially undermine food security within WA. Furthermore, Australia has yet to establish an appropriate mechanism for measuring and pricing natural capital. Without government support, farmers efforts to increase natural capital were going unrewarded, as currently there were no price incentives and the costs associated with accreditation would place even more pressure on declining on-farm profitability.

With increasing urbanisation and the aggregation of farms, most rural communities were declining. Farmers wanted to see greater government investment in roads and rural infrastructure, especially in telecommunications. However, increased education and health services in rural areas were also important to attract and retain the work force and supporting industries.

For the retailer butchers, most wanted to see more government support for local food producers and small to medium-sized enterprises (Table 30). Many spoke about the financial difficulties they were experiencing and the various opportunities for government to assist in providing financial assistance for apprentices, renewable power generation and even legislation to curtail the increasing cost of leasing the premises from which they operated.

N%Support local producers/small business423.5Review competition policy317.6Educate consumers211.8

Table 30: What government needs to do to address political constraints for retail butchers

Rent freeze	1	5.9
Financial incentives for apprentices	1	5.9
Open up	1	5.9
Control animal activists	1	5.9
Promote/encourage solar energy rebates for business	1	5.9
Reinstate jobkeeper	1	5.9
Communicate/consult with industry	1	5.9
Incentives for renewable power generation	1	5.9
Facilitate greater price transparency	1	5.9
Reduce foreign ownership of farms	1	5.9
Ν	17	

Many retailers also spoke of the need for government to review competition policy. However, the focus of the retailers was not directed towards the supermarkets, but rather towards the abattoirs and meat wholesalers, for most retailers reported that there was very little difference in the wholesale price of meat between the various wholesalers. Retailers wanted to see greater price transparency in meat supply chains. Furthermore, as wholesalers were revising their terms of trade, many small independent retailers were being disadvantaged.

INDUSTRY CONSULTATION AND VERIFICATION

Having identified the major constraints impacting on both the fresh fruit and vegetable industry and broad acre agriculture (mixed cropping, pastoralists and graziers), given the difficulties associated with the collection of primary data, rather than attempting to organise a physical workshop at which participants could collectively develop a draft plan, the decision was made to prepare and to circulate an online webinar.

The webinar was recorded in February 2023, and released in March (https://youtu.be/TJeUSmrA_TM). By mid-June, the webinar had been viewed 217 times.

Although the webinar concluded with an oral request for viewers to submit their comments and a link to a mailbox [survey@perthnrm.com only two written responses were received.

In parallel, an email was despatched to the Executive Officers of all known producer associations advising them that the webinar had been posted online and that, at their discretion, a representative was available to attend a group meeting and to physically present the results. Only two such meetings were forthcoming: one in person and one online.

Economic issues were those that were foremost in the minds of most respondents. Collectively, respondents spoke about:

- the high cost of labour and the lack of labour in rural areas. With increasing urbanisation, rural communities were declining, fewer young people were choosing agriculture as a career and to a large extent, as demonstrated by the COVID-19 pandemic and restrictions on international travel, the industry had become reliant on casual workers. Without a sufficient quantity of suitably trained employees, food security within WA could be compromised.
- the increasing costs of inputs (chemicals, fertilisers, seeds, fuel and machinery)
- the increasing costs of compliance

- declining prices. The decline in farm gate prices were attributed to two factors: in the fresh fruit and vegetable industry, the power the supermarket chains were able to exercise was eroding the longterm profitability of the industry. Without being profitable, producers could not make the long-term investments in equipment, machinery and technology to increase productivity. Those in the livestock industry, expressed similar concerns, albeit that the lack of competition in the processing of both sheep and cattle by the abattoirs was the main concern.
- in response to both situations, a greater number of producers were now dealing directly with both consumers and institutional buyers. While selling direct offered an alternative market outlet, it also came at a cost. Farmers not only had to employ additional staff to pack and distribute the product to consumers and institutional buyers, but they also had to diversify the range of product they had available so that they could attract and retain their customers. In some instances, they could buy product from neighbouring farmers, but in other instances, they had to do it themselves, and as the diversity of the product portfolio grew, so also did the costs of production.
- however, the main issue to arise with the expansion of direct sales was food safety. While it is broadly accepted that the food produced in WA is safe to eat, not all food producers were operating under an approved food quality assurance program. As the costs of implementing such a system are significant, many producers expressed concerns that their competitiveness was being eroded by those producers who had yet to implement any quality assurance system.
- the lack of funds for investment. Investing in new plant and equipment had recently become a necessity due to the passing of the recent OHS legislation which required farmers to provide a safe working environment and to train employees in how to safely use that machinery.
- the high cost of infrastructure in rural areas, particularly with regards to electricity for a new or expanding business
- the high costs of transport
- interstate competition
- the declining availability of land and the high costs associated with the purchase of farmland, especially for those entering the industry.
- the high costs of transitioning to more sustainable farming practices and the lack of any price incentive. While it was clear that consumers wanted their food to be produced in a manner that was both ethical and environmentally sustainable, consumers were not prepared to pay any more for sustainably produced food.
- the branding of regenerative agricultural products was also perceived as being problematic. While regenerative farming practices are primarily targeted at encouraging farmers to improve soil structure, farmers have a great deal of flexibility in adopting those practices which are best suited to their property and to their current on-farm management practices. In the absence of any standards for regenerative farming, it was difficult to promote the product as being regenerative, for just as it meant different things to different farmers, it also meant different things to different consumers. The flexibility in what regenerative farming meant and how the system was adopted and operated on-farm was what made it appealing to many farmers.

In exploring the environmental constraints, the key issues to emerge in this round of interviews included:

- salinity
- the availability of water and declining water quality
- constraints associated with how much rainwater farmers could collect
- land degradation, especially among the pastoralists, as a result of over grazing

- bird damage, particularly for fruit crops in the south-west. While some growers had erected netting, it was not cost-effective.
- the lack of any cost-effective means for replacing plastic packaging
- several respondents again spoke about the lack of any financial incentives to adopt more sustainable farming practices and hence the lack of any incentives to invest in natural capital.

In addressing the social constraints, there was:

- a clear need for farmers to tell their story. With greater urbanisation, more consumers had become
 disconnected from the origin of their food and how that food had been produced. Farmers needed
 to tell their side of the story and to actively promote the activities they were undertaking on farm to
 improve sustainability, enhance biodiversity, to reduce the amount of chemicals applied and the
 ethical treatment of animals.
- promote the role of livestock in sustainable farming systems. While there was a widely held
 perception that ruminant animals were contributing to climate change, consumers failed to
 understand that grazing stimulated the photosynthetic capacity of pastures and plants, which then
 increased the amount of carbon sequestered in soils. Grazing also facilitated the distribution of
 nutrients, through manure, which was necessary for those plants to grow.
- promotion of farming was also necessary to attract young people into the industry, as farmers were aging.

Finally, in exploring the role of government, respondents in this second round of interviews spoke about:

- the amount of red tape was increasing with the recent introduction of the new OHS legislation and the introduction of Aboriginal Heritage Act in July 2023
- government support for smallholder producers was perceived to be declining, with DPIRD currently
 focused on promoting larger enterprises with a view towards enhancing exports. However, several
 respondents in the fresh fruit and vegetable industry indicated that export was proving difficult, as
 WA was a high-cost producer, and against most of our competitors, product from WA had a
 competitive disadvantage.
- several respondents reinforced an earlier finding that government needed to consult with industry more frequently. Proposed government grants and assistance programs were more effective where they had been co-designed with industry.
- several respondents spoke on how government should make informed decisions based on science and best practice, rather than public opinion. These comments related to the imminent ban on the live export of cattle and sheep. Under the protocols established by MLA, exporters had significantly improved conditions aboard the ships and livestock losses had been significantly reduced.
- on numerous occasions, respondents spoke of problems associated with the lack of any long-term planning and inconsistency in the application of plans by local governments. Within the south-west of the State, large areas of productive agricultural land were being lost to residential and commercial development. The greatest threat today were the corporates who were now buying highly productive farmland to grow trees as carbon offsets. Many respondents were angered by this, for it was much easier and less expensive for corporate Australia to purchase carbon offsets than it was to reduce carbon emissions.
- some respondents were also concerned about the foreign ownership of land. In some cases, where
 government approval had been given, this was not necessarily a bad thing, for without foreign
 buyers, some farmers had experienced difficulties in exiting the industry. However, there was also
 some concern expressed about the low level of investment in agriculture by Australian
 superannuation schemes.

- respondents in rural areas repeatedly spoke of the problems associated with poor internet connectivity. This was a major constraint for those wishing to adopt smart farming techniques.
- there was a need for government to review or to revise the high cost for farmers and small businesses in rural areas to connect to the electricity grid.
- in addressing the issue of food safety, several respondents saw a role for government in both educating those producers who currently did not operate under an approved food safety system, but also in passing legislation to make the adoption of a food safety system mandatory for all food producers. As government no longer conducted random tests on the quality of food products on the shelf, several advocated that such testing be resumed, especially in farmers markets, in the interest of public health.
- producers wanted to see greater transparency in the reporting of prices so that consumers could see where the majority of the profits in the industry were going.
- in the absence of any price premiums for sustainably (or regeneratively) produced food, there was an immediate need for government to provide some financial incentives. With respect to the ecosystem services provided by the farming community, natural capital is a public good and yet no remuneration was provided to farmers in WA to protect, maintain and indeed, after years of neglect, to improve natural capital.
- while there is within the State of WA a strong preference for locally produced food, there was a widespread perception among the respondents that the Buy West Eat Best campaign was not supporting local growers. The majority of effort, it seemed, was being directed towards export markets.
- many respondents saw a role for government in promoting good health and nutrition. Far too many
 consumers were making inappropriate food choices, selecting foods that were energy dense, high
 in fats, sugar and salt, and low in fibre and essential nutrients. Promoting healthy nutritious foods
 would significantly reduce the rising costs of public health.
- strengthening biosecurity measures. WA is a significant exporter of grain, meat, fresh fruit and vegetables and honey. For all of these products, market access was contingent upon maintaining and protecting the State from the incursion of significant weeds, pests and diseases. While the WA government was actively taking steps to manage biosecurity risks in WA, concerns were expressed that funding may decline.
- in supporting the objectives of this project, there was a suggestion that government needed to
 adopt a risk planning approach. As recent events in both the interior of Australia and in the far
 north of the state had illustrated, the incidence of severe weather events was becoming more
 prevalent, isolating entire communities and potentially disrupting the interstate supply of processed
 food products.

RECOMMENDATIONS

Currently within the State of WA, there is no overarching government plan to address issues associated with either the long-term sustainable production of food within WA or to ensure and maintain the continuous supply of imported food into WA.

This situation must be addressed as the food industry within WA is facing a number of political, economic, social, technological, environmental and legal constraints.

There is an urgent need for a comprehensive long-term strategy that will:

- protect prime agricultural farmland from being lost to residential, commercial and industrial development; and
- protect farmers right to farm, with particular reference to those agricultural enterprises located in peri-urban areas.

In collaboration with the private sector, there is a need for greater investment in rural infrastructure including:

- roads
- water
- telecommunications with particular reference to internet connectivity to support the more widespread adoption of smart farming technologies.
- to examine more cost-effective ways for farmers and rural food processors to be connected to the electricity grid.
- to improve health and education services in rural areas to attract and retain the labour that the industry requires and
- provide financial incentives for the construction of more rental accommodation in rural areas.

There is an urgent need to:

- review competition policy. While the efforts of the supermarkets to drive prices down may be of benefit to low-income households, at the farm level, it is becoming more difficult to achieve any meaningful economies of scale. As input costs are rising and prices falling, the profitability of most farming operations is declining. Without making a fair return on their capital, farmers do not have the funds to invest in technologies that might improve productivity, nor are they able to invest in more sustainable farming practices. Within the meat industry, the lack of competition is reducing the margins for both farmers and retailers. Both producers and small independent retailers want to see greater price transparency in food chains.
- review industry compliance and traceability. In transacting with the supermarkets, food producers are required to have a quality assurance program that assure downstream buyers that the product is safe and that it complies with the requirements of the Modern Slavery Act. There is also an increasing requirement for producers to demonstrate that the food has been produced in a sustainable manner. While producers are free to choose whether they will deal directly with the supermarkets, the costs of implementing these quality assurance systems are significant, both in time and financially. However, not all food producers in WA operate under a quality assurance system, and with more product moving direct from farms to institutional buyers [restaurants and retailers] and consumers [through online delivery programs and farmers markets], those farmers operating under a quality assurance system are financially disadvantaged. The situation is aggravated by the lack of any random testing of food products on the retail shelf. While the Food Act states that "all food producers must take all reasonable steps to ensure that the food is safe", in

the absence of any regular testing, those producers who do not comply are doing so without penalty, but in continuing to trade without redress, are endangering public health.

- strengthen trespass laws. The covert operations of animal activists to gain access to farms and food processing operations is presenting an unacceptable threat to biosecurity. The introduction of exotic weeds, pests and diseases has serious implications for both domestic and international market access. Farmers have requested that the laws for trespassing be strengthened to deter such incursions and to protect the health of their livestock.
- regulate/enforce truth in the labelling food products. To avoid potential prosecution, a number of retailers have sought clarity in how free range and pasture fed meat is defined.
- provide clarity on carbon pricing.

In addressing the many impediments industry currently faces, there is an opportunity for government to provide more support for local food producers. This may take a number of forms including:

- simplifying and reducing the amount of red tape. Neither farmers or retailers want or expect handouts from government: they simply want a reduction in the amount of red tape to make it less costly to operate their business. This can be achieved, in part, by:
- providing greater assistance to farm enterprises and small business to implement and to comply with regulations.
- providing financial incentives to encourage more value-added processing of food in WA. With greater urbanisation and rising standards of living, consumers today are eating more highly processed convenience food. However, within the State of WA, it is estimated that that no less than 46 percent of the food consumed within WA is imported.
- providing incentives for the adoption of sustainable agriculture practices. While consumers in most OECD countries prefer to purchase sustainably produced food, there is a strong body of evidence that the majority of consumers are unwilling to pay a price premium (White, Hardisty and Habib, 2019; Li and Kallas, 2021). Conversely, while most farmers in Australia recognise the need to protect the natural capital that underpins their production systems, currently there is no means of remunerating farmers for the environmental services that they deliver to society or to reward those farmers who actively make improvements to their land to increase the value of their natural capital (NFF, 2020). Natural capital provides public conservation outcomes on private land which, without appropriate compensation, will result in an indefinite decline in natural capital. While farmers are implementing a number of strategies to deal with the impacts of climate change, few, if any, of these strategies are cost neutral: most require a significant investment in capital. With rising costs and diminishing farm gate prices, most food producers are struggling to justify the investment. Environmental risks are being replaced by economic risks. Within the European Union, the Farm to Fork Strategy addresses comprehensively the challenges of sustainable food systems and recognises the links between healthy people, healthy societies and a healthy planet (European Commission, 2020). The strategy aims to reduce the environmental and climate footprint of the EU food system and strengthen its resilience, ensure food security in the face of climate change and biodiversity loss, and lead a global transition towards competitive sustainability. Modern food chains are envisioned as having a neutral or positive environmental impact, preserving and restoring the land and freshwater upon which the food system depends; help in mitigating and adapting to climate change; protect land, soil, water, air, plant and animal health and welfare; and reverse the loss of biodiversity. While it is also important to ensure that all people at all times have access to a sufficient quantity of healthy, nutritious food, it must also generate fair economic returns for all actors in the supply chain, so that ultimately sustainable food also becomes the most affordable food. Blue Marble (2021) highlight the role that government plays in supporting sustainable food systems. Government is not only the key player in raising awareness about a

number of issues including climate change, nutrition and diets, innovation and technology, but there is also a need for government to lead actions with regards to the environment and its link to sustainable food systems.

- education is necessary to reduce the spirally health costs in the public and the private sector arising from the poor food choices that most consumers are making. Today, six of the top 11 risk factors driving the global burden of disease are related to diet (IFPRI, 2017). Unhealthy diets pose a greater risk to morbidity and mortality than unsafe sex, and alcohol, drug and tobacco use combined (Lancet Commission, 2019). The AFPA (2022) sought a commitment from government to include the household consumption of fresh fruit and vegetables as a wellbeing measurement in the 2023/24 Budget, to drive government-wide action and investment toward supporting improved access to fresh produce and a healthier Australia. With the majority of the population of WA living in the Perth metropolitan area, consumers have been become disconnected from the food supply system. Education in schools is required to teach children how food is produced, how its impacts health and the environment, and to improve food literacy. A greater awareness of agriculture and the activities industry is undertaking to adopt technologies that reduce the environmental impact of food production may also encourage more young people to pursue agriculture and the food industry as a career, thereby reducing the dependence on migrant workers.
- consult and communicate with industry. Primary producers repeatedly spoke of their frustrations in dealing with government. Producers want government to actively engage with them (and their associations) to discuss impending legislation before its introduction to parliament. Where government intends to introduce new grants to facilitate more on-farm innovation and investment, producers wanted to be consulted so that these schemes would better meet government's anticipated objectives.

In conjunction with industry, there is a role for government to play in:

- promoting local product. Within WA, there is a clear preference for local food. The motivations for consumers to buy local food are many and varied, ranging from improved health (Schmitt, et al., 2017), to improved quality and freshness (Allen, 2010; Cappelli et al., 2022; Jia, 2021; Nakajima, 2022), and distrust in the corporate sector (Allen, 2010). The perceived socio-economic benefits include their desire to support small local producers and the local economy (Schmitt, et al., 2017; Cappelli et al., 2022; European Commission, 2013), and social justice and equity (Allen, 2010; Cappelli et al., 2022). However, there is also a mounting body of evidence to suggest the local food is not necessarily more sustainable (Schmitt, et al., 2017; Cappelli et al., 2022; Jia, 2021; European Commission, 2013). While DPIRD operate the Buy West Eat Best program, it is apparent that the uptake of the program by primary producers is largely restricted to the larger corporate entities and producer associations. It was also apparent when undertaking the retail surveys that awareness of the Buy West Eat Best has significantly declined.
- promoting social license. Croplife Canada (2022) define social license as the level of public trust granted to a corporate entity or industry sector by the community at large and its key consumer base. Public trust is the belief that activities are consistent with social expectations and the values of stakeholders, and is earned through industry engagement, operating practices and expressed values. Regrettably, and more so in recent times as community expectations have shifted, tensions have emerged between farmers, the government and civil society over a multitude of issues including land clearing, protecting biodiversity, the adoption of agricultural technologies such as GMOs, animal welfare and the allocation of water rights (CSIRO, 2011). The immediate challenge for industry is to educate and accurately inform consumers of the many different activities farmers and graziers are undertaking to conserve resources and to restore the landscape.

REFERENCES

ABARES. 2020. Analysis of Australian food security and the COVID-19 pandemic. Insights. Canberra.

Allen, P. 2010. Realizing justice in local food systems. Cambridge Journal of Regions, Economy and Society, 3, 295-308. doi:10.1093/cjres/rsq015

Australian Fresh Produce Alliance. 2022. Inquiry into food security in Australia. The House Standing Committee on Agriculture. December.

Baker, D., Fear, J. and Denniss, R. 2009. What a waste: An analysis of household expenditure on food. Policy Brief No. 6. The Australia Institute.

Bartos, S. 2022. Fork in the Road. Impacts of climate change on our food supply. Farmers for Climate Action.

Blue Marble. 2021. The Role of Government in Food Systems Transformation. UN Food Summit.

Brundtland Commission. 1987. Our Common Future.

Butcher, L.M., O'Sullivan, T.A., Ryan, M.M., Lo, J. and Devine, A. 2018. Utilising a multi-item questionnaire to assess household food security in Australia. Health Promotion J Australia: 1-9.

Cappelli, L., D'Ascenzo, F., Ruggieri, R., and Gorelova, I. 2022. Is Buying Local Food a Sustainable Practice? A Scoping Review of Consumers' Preference for Local Food. Sustainability, 14, 772. doi.org/10.3390/su14020772.

Convention on Biological Diversity Article 2. 2006.

CSIRO. 2011. Defending the social licence of farming. Issues, challenges and new directions for agriculture. Collingwood, Victoria.

Croplife Canada. 2022. What does social license mean for agriculture?

https://croplife.ca/what-does-social-license-mean-for-agriculture/

DAFWA. 2009. Plan to Support Food Industry Development 2009-2012.

DCCEEW. 2021. https:// soe.dcceew.gov.au/overview/environment/biodiversity

Department of Water (2016). Water for growth: urban. Western Australia's water supply and demand outlook to 2050. Government of WA.

DPIRD. 2017. https://www.agric.wa.gov.au/soil-acidity/soil-acidity-western-australia.

DPIRD. 2021. Dryland salinity Western Australia. https://www.agric.wa.gov.au/soil-salinity/dryland-salinity-western-australia-0.

Economist Impact. 2022. Global Food Security Index. http://impact.economist.com/sustainability/project/food-security-index/

Elkington, J. 1994. Enter the Triple Bottom Line. In Henriques, A. and Richardson, J. (eds). The Triple Bottom Line. Does It All Add Up. Routledge. London.

European Commission. 2013. JRC Scientific and Policy Reports. Short Food Supply Chains and Local Food Systems in the EU. A State of Play of their Socio-Economic Characteristics. Luxembourg. doi:10.2791/88784.

European Commission. 2020. Farm to Fork Strategy. For a fair, healthy and environmentally-friendly food system. EU Green Deal.

FAO Council. 1989. https://www.fao.org/3/z4961en/z4961en.pdf

FAO. 2006. Food security. Policy Brief 2. Rome

FAO. 2007. Approaches to linking producers to markets: a review of experiences to date. Rome.

FAO. 2014. Developing sustainable food value chains – Guiding principles. Rome

FAO. 2018. Transforming Food and Agriculture to Achieve the SDGs: 20 interconnected actions to guide decision-makers. Technical Reference Document. Rome.

FAO. 2021a. Seven reasons why pastoralism supports a better future. Rome.

FAO. 2021b. Climate-smart livestock production. A practical guide for Asia and the Pacific region. Bangkok. https://doi.org/10.4060/cb3170en

Fearne, A., Duffy, R. and Hornibrook, S. 2005. Justice in UK supermarket buyer-supplier relationships: an empirical analysis. International Journal of Retail and Distribution Management, 33(8), 570-582

Fearne, A., Hughes, D and Duffy, R. 2001. Concepts of collaboration: supply chain management in a global food industry. In Eastham, J.F., Sharples, L. and Ball, S.D. (Eds). Food Supply Chain Management: Issues for the Hospitality and Retail Sectors. Butterworth-Heinemann. Oxford.

Foodbank. 2021. Foodbank Hunger Report 2021. The reality of the food crisis facing Australia.

Hingley, M. 2005. Power imbalanced relationships: cases from UK fresh food supply. International Journal of Retail and Distribution Management, 33(8), 551-569

Garnaut, R. 2008. The Garnaut climate change review. Final report. Cambridge University Press

Godfray, H.C.J. and Garnet, T. 2014. Food security and sustainable intensification. Phil Trans Royal Society.

HLPE. 2020. Food security and nutrition: building a global narrative towards 2030. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security. Rome

International Food Policy Research Institute. 2017. Global Food Policy Report. Washington DC.

Integrate Sustainability. 2018. https://www.integratesustainability.com.au/2018/06/25/western-australias-unique-biodiversity

ISU.2015. Food in an urbanised world. The role of city region food systems in resilience and sustainable development.

Jia, S. 2021. Local Food Campaign in a Globalization Context: A Systematic Review. Sustainability, 13, 7487. doi.org/ 10.3390/su13137487

Kaplinsky, R. and Morris, M. 2002. A Handbook for Value Chain Research. IDS.

Lancet Commission. 2019. Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. http://dx.doi.org/10.1016/ S0140-6736(18)31788-4.

Li, S. and Kallas, Z. 2021. Meta-analysis of consumers' willingness to pay for sustainable food products. Appetite. https://doi.org/10.1016/j.appet.2021.105239

Lindberg, R., Lawrence, M., Gold, L., Friel, S. and Pegram, O. 2015. Food insecurity in Australia: Implications for general practitioners. AFP, 44,11: 859-862.

Ma, Q., Bell, R., Scalan, C. and Neuhaus, A. 2022. Long-term rundown of plant-available potassium in Western Australia requires a re-evaluation of potassium management for grain production: a review. Crop and Pasture Science. CSIRO. https://doi.org/10.1071/CP21612.

Nakajima, M. 2022. Sustainable Food Consumption: Demand for Local Produce in Singapore. Sustainability, 14, 12330. doi.org/10.3390/su141912330

National Farmers Federation. 2017. Food, Fibre and Forestry Facts. A summary of Australia's agricultural sector.

National Farmers Federation. 2020. Natural capital.

Safe Work Australia. 2021. Work-related injury fatalities. WHS statistics Australia 2021.

Schmitt, E., Galli, F., Menozzi, D., Maye, D., Touzard, J.M., Marescotti, A., Six, J. and Brunori, G. 2017.

Comparing the sustainability of local and global food products in Europe. Journal of Cleaner Production, 165: 346-359. doi:10.1016/j.jclepro.2017.07.039

Soil and Land Conservation Council, WA. 2020. State Soil Health Strategy, Western Australia. Department of Primary Industries and Regional Development, Perth

Sudmeyer, R., Bennett, A. and Strawbridge, M. 2016. Climate-ready agriculture: a situation statement for Western Australia. Bulletin 4876. Department of Agriculture and Food.

United Nations. 1966. International Covenant on Economic, Social and Cultural Rights. Rome. (also available at http://www.ohchr.org/EN/ ProfessionalInterest/Pages/CESCR.aspx).

United Nations. 1996. Rome Declaration on World Food Security. Rome. (available at http://www.fao.org/3/w3613e/w3613e00.htm).

United Nations General Assembly (UNGA). 1948. Universal Declaration of Human Rights. Resolution adopted by the General Assembly on 10 December 1948, General Assembly resolution 217 A. Paris. (available at https://www.un.org/en/universaldeclaration-human-rights/).

United Nations. 2015. Sustainable development. https://sdgs.un.org/goals

United Nations. 2019. Global Sustainable Development Report 2019. https://sdgs.un.org/gsdr/gsdr2019.

Waste Authority WA. 2016. Tackling Avoidable Food Waste in Western Australian Schools. Final report.

Water Corporation. 2022. Our Water / Groundwater. https://www.watercorporation.com.au/Our-water/Groundwater

White, H.M.F. 2000, . Buyer-supplier relationships in the UK fresh produce industry. British Food Journal, 102(1), 6-17.

White, K., Hardisty, D.J. and Habib, R. 2019. The elusive green consumer. Harvard Business Review.

https://hbr.org/2019/07/the-elusive-green-consumer

World Bank/FAO. 2017. Food systems for an urbanising world. Knowledge Product.

APPENDIX 1

The Questionnaire for Primary Food Producers

Thank you for agreeing to complete this survey.

If you are completing this as a writable pdf on your computer, please save it before commencing the survey. The survey does not need to be completed in one hit if that doesn't suit you - you can save your responses and complete the survey at your convenience.

To facilitate the discussion and the collection of data, information is being collected using the PESTLE framework. PESTLE is a strategic decision-making tool that collects information under six broad headings: the Political, Economic, Social, Technological, Legal and Environmental.

We estimate that it will take approximately 20 minutes to complete.

Upon completion, SAVE your responses, and send your completed survey by email to [insert address].

Although we ask for some personal details, this is only to provide a mechanism by which we can contact you should we need to clarify your responses, to provide you with a draft copy of the report, and to organise payment to your nominated industry association.

All information will be aggregated at either an industry level or by region. Information obtained from individual enterprises will not be identified nor disclosed to any third parties.

ID [please leave this blank] Business name

Principal business activity [please tick ONLY one response]

Boof cattle farming
Shoop farming
Sheep lanning
Grain-sneep or grain-beet farming
Other livestock [pork and poultry]
Dairy production
Other grain growing
Fruit production [including nuts and olives]
Vegetable production
Viticulture
Aquaculture
Fishing
Other [please specify]
Principal business location:
Preferred industry association [for payment]:
Email:
The POLITICAL factors include trade policies, the ease of doing business and various other government

activities including the provision of infrastructure.

- 1. What are the major political factors that impact both positively and negatively upon your ability to pursue more sustainable practices in the production and processing [where applicable] of food products?
-
- Acting individually, most food producers have little political influence. However, (i) to what extent are the groups or associations of which you are a member able to influence the political environment; and (ii) what issues are they addressing?

.....

3. What political issues remain unresolved and/or still need addressing to enable you to implement more sustainable business practices within your farming enterprise?

.....

The ECONOMIC factors refer to the economy in which your business operates. Based on the results of the pilot surveys these may be divided into two sub-components: finance and markets.

4. What are the major economic factors that are impacting positively and negatively upon the profitability of your farming enterprise? This might include such factors as the rising cost of inputs, the non availability of inputs, poor productivity or low prices, etc.

.....

5. What activities are you doing on-farm or in the downstream processing of your products [where applicable] to improve the profitability of your farming enterprise and thus contribute to the long-term financial sustainability of your business?

.....

6. What economic factors remain unresolved and/or still need addressing to enable you to implement more financially sustainable business practices within either or both your farming operation and/or the downstream processing [where applicable] of food products?

.....

7. Dealing now with the markets for your food products, whether fresh, raw or processed, as an operator within the food value chain, what do you believe are the major drivers influencing the consumer demand for food products and agriculture in general?

.....

8. By what means, including both direct and indirect, do you distribute your food products to market intermediaries [agents, wholesalers, retailers, food processors, restaurants and institutional buyers] and consumers? As most enterprises have multiple modes of distribution, to the maximum extent possible, please try to determine what proportion of your output is allocated to each mode. Your answer(s) should total 100%.

.....

9. What are the major factors that are impacting positively and negatively upon your ability to market the food products you produce?

.....

10. What activities are you doing on-farm or in the downstream processing of your products [where applicable] to improve the market opportunities for the food products you have produced?

.....

11. What factors remain unresolved and/or still need addressing to enable you to better market the food products you have produced?

.....

The SOCIO-CULTURAL factors relate to society and culture, and in particular, how demographic issues [like population and ethnicity], consumer lifestyles and trends, influence the demand for fresh and processed food products.

12. What are the major socio-cultural factors that impact positively and negatively upon your business at the farm production level and/or in the downstream processing of food products?

.....

13. What activities are you doing on-farm or in the downstream processing of your products [where applicable] to either address those socio-cultural issues that impede the long-term sustainability of your business or to take advantage of the opportunities presented?

.....

14. What socio-cultural issues remain unresolved and/or still need addressing to enable you to implement more sustainable business practices in either or both your farming operation and/or the downstream processing [where applicable] of food products?

The TECHNOLOGICAL factors affecting a business include the emergence of new technologies, and with particular reference to agriculture, the availability of information and factors affecting the adoption of new technologies.

15. What are the major technological factors that impact positively and negatively upon your business at the farm production level and/or in the downstream processing of food products?

.....

16. What activities are you doing on-farm or in the downstream processing of your products [where applicable] to either address those technological issues that impede the long-term sustainability of your business or to take advantage of the opportunities presented?

.....

17. What technological issues remain unresolved and/or still need addressing to enable you to implement more sustainable business practices in either or both your farming operation and/or the downstream processing [where applicable] of food products?

The LEGAL factors often overlap with the political factors and include trade and consumer laws, employment regulations, competition, food labelling and health and safety regulations.

18. What are the major legal factors that impact positively and negatively upon your business at the farm production level and/or in the downstream processing of food products?

.....

19. What activities are you doing on-farm or in the downstream processing of your products [where applicable] to either address those legal issues that impede the long-term sustainability of your business or to take advantage of the opportunities presented?

.....

As this may include quality management systems, please answer the following questions.

- 20. Are you currently operating under any quality management system?
 - a) Yes
 - b) No [Please circle your response]
- 21. If yes, as you may be operating under multiple quality management systems, please list all of the quality management systems under which your business currently operates.

.....

22. What legal issues remain unresolved and/or still need addressing to enable you to implement more sustainable business practices in either or both your farming operation and/or the downstream processing [where applicable] of food products?

.....

The ENVIRONMENTAL factors are related to global warming, climate change, the [non] availability and depletion of natural resources, pollution and biodiversity.

23. What are the major environmental factors that impact positively and negatively upon your business at the farm production level and/or in the downstream processing of food products?

.....

24. What activities are you doing on-farm or in the downstream processing of your products [where applicable] to either address those environmental issues that impede the long-term sustainability of your business or to take advantage of the opportunities presented?

.....

25. What environmental issues remain unresolved and/or still need addressing to enable you to implement more sustainable business practices in either or both your farming operation and/or the downstream processing [where applicable] of food products?

.....

END OF SURVEY

Thank you for completing this survey and the valuable contribution you have made towards the development of a more sustainable food future for the State of Western Australia.

If you have not already, please SAVE the changes you have made to the document.

Please send your completed survey by email to survey@perthnrm.com.

We will be in touch soon to share the results and to further engage in a collaborative planning process.

APPENDIX 2

The Questionnaire for Retailers

At a global level, there is a growing recognition that "our prevailing food system is not sustainable" (Lancet 2019). Late last year, the UN Secretary-General António Guterres convened an international Food Systems Summit as part of the Decade of Action to achieve the Sustainable Development Goals by 2030. The Summit resulted in each of the Member States agreeing to pursue many bold new actions to deliver progress on all 17 SDGs, each of which relies to some extent on more healthy, more sustainable and more equitable food system.

The health of our food systems profoundly affects the health of our bodies, as well as the health of our environment and our economies. However, too many of the world's food systems are fragile and vulnerable to collapse, including our own. Within Western Australia, agricultural productivity is driven by three primary factors: climate, land characteristics and land management (DAFWA, 2013). An analysis of climate data over recent decades has demonstrated that mean temperatures are rising and annual rainfall is declining. Furthermore, most of our soils and landscapes are vulnerable to some form of land degradation.

On the consumption side, diets are changing. With higher personal disposable income, consumers are eating more meat, dairy products, fats and oils, and more highly processed convenience food. This food is generally energy dense, high in saturated fats, sugar and salt, but very low in dietary fibre, nutrients and minerals. Hence, while most consumers have access to a greater variety of food, too many consumers are making food choices that are not consistent with good nutrition, health and wellbeing.

Furthermore, with the increasing concentration and aggregation of the food industry, our food chains are becoming longer. While consumers may have access to a greater quantity and diversity of food, consumers are also exposed to the greater risk of a food safety breakdown and a reduction in the resilience of our food system to price shocks, breakdowns in transportation and climate variability, which the COVID-19 pandemic has exacerbated.

To encourage and support the development of a cohesive overarching multi-agency assessment that informs policy and supports strategic long-term investment in sustainable food systems, Perth NRM has been commissioned by the Commonwealth Government to facilitate the development a food security plan for the State of Western Australia.

Information is being sought from primary producers, wholesalers and traders, food processors, retailers and institutional users to:

- identify the key constraints [political, economic, social, technical, legal and environmental] that impact on food production, processing, distribution and consumption
- what individual businesses are doing to address these constraints
- what issues require support from government to rectify or resolve

As a wholesaler, retailer and/or institutional food user, as you interact with the consumer on a daily basis, additional information is being requested to:

- identify the key issues and/or concerns that consumers express about the food they are about to purchase or consume [quality, food safety, origin, method or means of production and/or processing, ethics and sustainable practices]
- what are the major drivers impacting positively/negatively on the consumer demand for the products you sell.

We ask for just 10-15 minutes of your time to answer the following 7 questions, or, where you do not have time to meet personally, you can write your answers in the space provided, scan and email your responses to survey@perthnrm.com

1. What are the key constraints that currently impact upon your business in a negative way [whether political, economic, social, technical, legal or environmental]?

2.	What things are you doing to reduce the impact of these constraints on your business?
3. If so, w	Are you a member of any industry association? hat association
lf so, w busines	hat, if anything, is your industry association doing to reduce the impact of these constraints on your ss?
4.	What things does government [whether Local, State or Commonwealth] need to do to reduce these constraints?
5.	In relation to the food products that you sell, what things do your consumers most often ask about?
6.	Are your sales increasing/decreasing?
7.	What are the major drivers impacting positively/negatively on the consumer demand for the food products that you sell?
IC	en del l'Une de la s'informe e d'affair anno des annés insta in de sur alche anne de se vill failleur, al ser a anno del

If you would like to be informed of the results or to participate in the workshops that will follow, please provide your email address:





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